

Florida Institute of Technology

Scholarship Repository @ Florida Tech

Theses and Dissertations

7-2017

Shared Leadership: Enactment, Perception, and the Role of Power Distance

Mina Milosevic

Follow this and additional works at: <https://repository.fit.edu/etd>



Part of the [Clinical Psychology Commons](#)

Shared Leadership: Enactment, Perception, and the Role of Power Distance

by

Mina Milosevic

A thesis

submitted to the School of Psychology
in the College of Psychology and Liberal Arts at
Florida Institute of Technology
in partial fulfillment of the requirements
for the degree of

Master of Science

in

Industrial Organizational Psychology

Melbourne, Florida

July, 2017

We the undersigned committee hereby approve the attached thesis, “Shared Leadership: Enactment, Perception, and the Role of Power Distance,”
by Mina Milosevic

Jessica L. Wildman, Ph.D.
Assistant Professor
College of Psychology and Liberal Arts,
Florida Institute of Technology

Patrick Converse, Ph.D.
Associate Professor
College of Psychology and Liberal Arts,
Florida Institute of Technology

Heidi Hatfield Edwards, Ph.D.
Associate Head, School of Arts and Communication
Professor
College of Psychology and Liberal Arts,
Florida Institute of Technology

Mary Beth Kenkel, Ph. D.
Dean
College of Psychology and Liberal Arts,
Florida Institute of Technology

Abstract

Shared Leadership: Enactment, Perception, and the Role of Power Distance

Author: Mina Milosevic, MPA

Major Advisor: Jessica Widman, Ph.D.

Interest in shared leadership stems from the growing evidence that adopting this approach to team management results in enhanced team performance, team effectiveness, and team satisfaction. However, to fully realize the value of shared leadership, we must understand exactly what shared leadership is as well as when and how it evolves in teams. This study used teams' verbal communication data to identify shared leadership behaviors and to explore the relationship between behaviorally-enacted shared leadership and its perception by the team members. In addition, the study examined the impact of power distance on shared leadership. The results show that, despite behaviorally-enacted shared leadership being a significant predictor of shared leadership perception, there is still a large amount of unexplained variance that needs to be explored. The expected impact of power distance on the perception and the enactment of shared leadership was not found.

Table of Contents

List of Figures.....	vi
List of Tables	vii
Introduction	1
Literature Review	5
Shared Leadership	5
Shared Leadership Defined	7
Shared Leadership Measured	8
Shared Leadership Findings	11
Implicit Leadership Theories	13
Implicit Leadership Theories and Shared Leadership	17
Cultural Values Frameworks.....	20
Power Distance	24
Power Distance and Implicit Leadership Theories	26
Power Distance and Shared Leadership	27
Hypotheses Development	28
Methods	45
Participants	45
Procedure	45
Artemis	45
Coding	46
Measures	48
Demographics	48
Power Distance Orientation	48
Power Distance Climate	48
Perceptions of Shared Leadership	49
Behaviorally-enacted Shared Leadership	51
Control Variables	54
Analyses	54
Reliability Analysis	54
Regression	55
Results	56
Descriptive Statistics	56
Hypothesis Testing	57

Exploratory Analysis	61
Discussion	69
Limitations	74
Future Research Directions	76
Conclusion	79
References	81
Appendix A: Coding Book	102
Appendix B: Coding Template Example	107
Appendix C: Power Distance Orientation Scale	108

List of Figures

Figure 1. Proposed Model	44
--------------------------------	----

List of Tables

Table 1. Leadership and Followership Behavioral Categories in Literature	36
Table 2. Differentiating Shared Leadership From Similar Concepts	52
Table 3. Results of Regression Analysis for Hypothesis 1, 2, and 4	59
Table 4. Descriptive Statistics and Correlations for Study Variables	60
Table 5. Results of Hierarchical Regression Analysis	62
Table 6. Results of Moderated Hierarchical Regression Analyses for Team Mean Power Distance and Team Standard Deviation of Power Distance	66
Table 7. Descriptive Statistics and Correlations for Behaviorally-enacted Shared Leadership Categories	67
Table 8. Descriptive Statistics and Correlations for Study Variables per Mission	68

Introduction

History of human progress has been deeply rooted in the evolution of teams and teamwork. Banding together is what drew us out of the caves, propelled us over the oceans and lands, and lifted us into the space. Teamwork has been the centerpiece not only of our social organizations, but also of our work ones (Kozlowski & Ilgen, 2006). As our human communities evolved, neither the scientific advancements nor the technological developments have diminished our reliance on teams; if anything, effective teams are more important today than ever. In the knowledge-based economy, where jobs have become more complex, workforces more educated, and the pace of technological change much faster, it is hard to imagine a single individual having all the knowledge and skills necessary to deal with the 21st century work challenges (Pearce, 2003). To solve complex problems, organizations increasingly depend on versatile skills, knowledge, and expertise of the teams of employees. In fact, it is estimated that upward of 80% of knowledge-based work nowadays is performed in teams (Vella, 2008). Not surprisingly, improving team effectiveness is frequently seen as one of the critical questions of organizational growth and survival.

Historically, effectiveness of teams have been linked to the effectiveness of leaders (Carson 2007). Past leadership research has mostly focused on a single formal leader; it was the characteristics and behaviors of that one individual that

were believed to provide an impetus for team and group performance (Park & Kwon, 2013). More recently, the focus has shifted away from a singular person to a broader conceptualization of leadership as a relational phenomenon, residing in the interaction between the leader and the followers (De Rue & Ashford, 2010; Wang et al., 2014). When applied to teams, the definition of leadership has been expanded even further to include not only the leadership of the team but also the leadership from within the team (Carson, Tesluk, & Marrone, 2007; Pierce & Conger, 2003). Seen from this perspective, leadership is conceptualized as a group property, emerging from the team interactions (Marks, Mathieu, & Zaccaro, 2001), reflected in the process of distributed influence among team members (Day, Gronn, & Salas, 2004), and resulting in a collective enactment of leadership (i.e., shared leadership; Contractor, DeChurch, Carson, Carter, & Keegan, 2012).

Shared leadership provides a promising solution to several organizational challenges that arise from managing team-based work structures (Day et al., 2006; Morgeson, 2005; Hoch, Pearce, & Welzel, 2010). First, it leverages the expertise of multiple employees, and provides a context for integrating a diversity of ideas, skills, and competencies (Fausing, Jeppesen, Jonsson, Lewandowski, & Bligh, 2013). Next, it appeals to the modern, knowledge-based workforce by giving employees autonomy and a voice in a decision-making process (Bligh, Pearce, & Kohles, 2006; Cox, Pearce, & Perry, 2003). Finally, by sharing leadership functions within the team, it reduces the need for formally appointed leaders. Today's

organizations are frequently expected to “do more with less”; in that environment, shared leadership enables organizations to realize the full value of the knowledge potential within its existing ranks and remain competitive (Fausing et al., 2013). But perhaps even more importantly, shared leadership has been found to have a positive impact on various team outcomes. Several recent meta-analysis have demonstrated that shared leadership increases team effectiveness and team performance, above and beyond traditional leadership (D’Innocenzo, Mathieu, & Kukenberger, 2014; Nicolaides, et al., 2014; Small & Rentsch, 2010; Wang, Waldman, & Zhang, 2014). Moreover, shared leadership positively influences team attitudinal outcomes (e.g., job satisfaction, commitment), and behavioral processes and emergent states (e.g. cooperation, helping, cohesion; Wang et al., 2014). Any approach that has a potential to simultaneously increase team performance, improve team satisfaction, and reduce costs associated with hiring external leaders, is likely to attract the attention of practitioners and scholars alike.

Despite the fact that interest in shared leadership has steadily grown over the past two decades, capturing what is actually shared among team members continues to be an elusive proposition; as a result, we still know very little about the processes and mechanisms that enable shared leadership emergence (Ulhoi & Muller, 2014). Part of the challenge has been that cognitive theories, so useful in understanding traditional hierarchical relationships, are not as neatly applicable to more collaborative leadership approaches (Shondrick, Dinh, and Lord, 2010). In

particular, implicit leadership theories (ILTs) rest on two assumptions:

1) leadership is reflected in the single individual, and 2) single leaders operates within a stable, hierarchical structure. Neither of these assumptions are necessarily met in the shared leadership context. In addition, what we do know about the emergence of shared leadership in teams often comes from subjective reports of team members. Given that shared leadership is conceptualized as a team property, and that the majority of team interactions are not observed by others outside the team, it is not surprising that shared leadership is typically assessed by individual members who are privy to these leadership behaviors (Marks et al., 2001). For the researcher, often the only glimpse into the “black box” of shared leadership is through the eyes of the team members. That view, cognitive research suggests, may tell us more about individuals’ perceptions of leadership than about the actual behavior enacted (Eden and Leviatan, 1975; Lord and Emrich, 2001); Consequently, our understanding of shared leadership is constrained by the measurement approach.

In an effort to provide a more nuanced understanding of the concept of shared leadership, this study will focus on two main objectives. First, in a departure from the traditional reliance on perceptual leadership questionnaires, the study will examine shared leadership through the verbal communications of the team members. To the extent that the verbal communication represents a proxy for the actual behavior, this approach will allow the researcher to separate the shared

leadership behavior from the perception of such behavior, and then to investigate the relationship between the two. Second, the study will consider the impact of the cultural value of power distance on shared leadership enactment and perception. This impact will be explored both at the individual and at the group level. Specifically, power distance orientation, as an individual-level variable, is expected to impact the perception of shared leadership, whereas at the group level, power distance climate is expected to predict the collective enactment of leadership. Furthermore, the moderating effect of power distance orientation on the relationship between the behaviorally-enacted shared leadership and the perception of such behavior by the individual team members will also be examined. By examining shared leadership dynamics in teams, and exploring power distance as an explanatory variable and a boundary condition of shared leadership emergence, the study hopes to provide a deeper understanding of what it means to share leadership, and when the sharing of leadership is most likely to occur.

Literature Review

Shared Leadership

The core idea of shared leadership is not new, neither in research nor in practice. Among leadership scholars, Gibb, who is often credited for introducing the term “distributed leadership”, argued as early as 1954 that leadership should be conceived as a group quality (as cited in Carson, 2007). Katz and Kahn (1978) further advanced such views of leadership by recognizing that the most effective

organizations are the ones where influential acts are widely shared. In business practice, self-managed work teams have been popular in the automotive industry as early as 1970's (Fuhman, 1999), and in education and healthcare management in the 1980's (Ulhoi & Muller, 2014). Yet, despite these early recognitions that leadership can and does emerge from within groups and teams, the empirical investigation of shared leadership remained largely dormant until the last decade of the 20th century (Pearce & Sims, 2002). In the mid-90's, the shift in leadership research from a focus on a single leader to a focus on the entire team came about as a consequence of changes in how work is performed and how organizations are structured. With the rapid rise in our technological capabilities, the nature of work shifted from production-based to knowledge-based, and, in response, the workforce became more skilled and educated (Pearce & Manz, 2005). At the same time, organizations faced growing pressures to meet the demands of the global economy and stay competitive. In this challenging business environment, it has become rare to find a single person with all the necessary skills and knowledge required to deal with complex problems (Pearce, 2007; Fausing et al., 2013). Instead, organizations are turning to teams of employees whose versatile skills, knowledge, and expertise can be brought together to meet organizational objectives. To realize the full value of teams, organizations are forced to rethink how they are organizing, managing, and leading them (Drucker, 1999, 2008; Gronn, 2002). For one, highly skilled workers are not satisfied to simply do what they are told; rather, they want to shape

both the work environment and the work product with high degree of autonomy (Fausing et al., 2013). Traditional hierarchical arrangements are increasingly challenged as organizations move away from centralized power and vertical chains of command, and toward coordination, mutual dependency, and shared responsibility. In that intersection of highly skilled workforce and new organizational landscapes, shared leadership emerges as a promising new approach.

Shared leadership defined. In its essence, shared leadership is conceptualized as a form of collective leadership occurring in groups and teams (Yammarino et al., 2012). It represent a clear departure from the traditional view of leadership, which is centered on the traits and behaviors of a single leader and the one-directional, downward influence of that leader on his or her followers (Yukl, 2002; Carson, 2005). As an alternative to the traditional hierarchical leadership, shared leadership is similar to a number of other concepts, such as distributed leadership, rotating leadership, team leadership, informal leadership, and peer leadership (Day, Gronn, & Salas, 2004; Pearce & Sims, 2000, 2002, D’Innocenzo, 2014). Because of similar theoretical and practical origins, these terms have often been used interchangeably (Bolden, 2011); recently, an effort has been made by shared leadership researchers to more clearly outline the boundaries of shared leadership and offer a conceptually distinct definition of the term. Pearce and Conger (2003) defined it as a “dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the

achievement of group or organizational goals or both” (p.1). Building on this concept of mutual influence among individuals in the group, Carson et al. (2007) defined shared leadership as an “emergent team property that results from the distribution of leadership influence across multiple team members” (p. 1218). D’Innocenzo and colleagues (2014) provided an integrative definition of shared leadership as “an emergent and dynamic team phenomenon whereby leadership roles and influence are distributed among team members” (p.5). Numbers of similar definitions are proposed, with the common thread of conceptualizing shared leadership as a relational phenomenon characterized by mutual influence and shared responsibility among team members.

Shared leadership measured. In measuring shared leadership, two approaches have dominated the field: the aggregate approach and the social network approach. In the aggregate approach, participants are asked to rate the degree to which the team as a whole engaged in leadership behaviors; those ratings are then aggregated and the average score per team represents an index of shared leadership (Avolio, Jung, Murry, & Sivasubramaniam, 1996; Pearce, Yoo, & Alavi, 2004; Small & Rentsch, 2010; D’Innocenzo et al., 2014). Because the entire team becomes the referent of the measure, and the measure is the level of agreement between members, this approach is also called referent-shift consensus model (Chan, 1998). Although widely used in empirical studies of shared leadership, the aggregate approach has been criticized because it assumes that the source of

leadership is a whole of team members without taking into consideration which team member exhibits leadership, and to what extent (Small & Rentsch, 2010; D’Innocenzo et al., 2014). When combining the contribution of individual team members, it is possible to have the exact same leadership score for a team where one member provided a very high degree of leadership compared to a team where all the team members provided very small degrees of leadership. Small and Rentsch (2010) summarize the criticism by pointing out that the aggregation approach tells us about the overall quantity of leadership in the team but not about the distribution of leadership.

In contrast, the social network approach considers the patterns of relationships among team members by asking them to assess the degree to which each individual engaged in leadership-like behaviors (D’Innocenzo et al., 2014). In general, a network represents a set of individuals (i.e., nodes) and the relationships between them (i.e., links or ties). Social network analysis (SNA) is a combination of theories, processes, and analytical tools for understanding and analyzing network structures and relationships (Hope & Reinelt, 2010). As a theory, the social network approach is considered especially conducive to studying shared leadership because it captures the reciprocal influence process among different team members (Mehra, Smith, Dixon, & Robertson, 2006; Carson et al., 2007; D’Innocenzo, 2014). As an analytical tool, SNA yields two common quantitative indicators of shared leadership: network density and network centralization. Network density is a

measure of the proportion of the total possible links that are actually present in the network (i.e., actual links over all possible links; Wasserman & Faust, 1994; Carson, 2007). Density can represent the presence of the ties when using binary data (leader/not leader), or the strength of the ties when using valued data (rating on a scale). For example, in their study of shared leadership, Carson et al. (2007) measured network density by using valued data, e.g., asking participants to rate the extent to which they relied on each team member for leadership using a 5-point Likert scale. In general, a dense network is an indication of a greater number of interactions among its members (Mayo, Meindl, & Pastor, 2003). However, there are divergent opinions as to whether network density is a measure of shared leadership distribution. Carson et al. (2007) argue that density captures the variance in the overall patterns of relationships, and that, as such, it “appropriately reflects the extent to which the leadership influence is distributed among a relatively high or relatively low proportion of team members” (p. 1220). Small and Rentsch (2010) and D’Innonenzo (2014) suggest that network density is just another version of an aggregation measure because it only provides a mean score of team relationships; nevertheless, they acknowledge that it still provides superior estimates of shared leadership than the typical aggregate methods.

Network centralization, another index of shared leadership, describes the distribution of network ties and whether those ties are concentrated around particular nodes. Mayo and colleagues (2013) propose that centralization is useful

in understanding the leadership role of specific individuals within the team, as well as of the entire network. At the individual level, node centrality is the extent to which links are organized around any one individual in the team (Small & Rentsch, 2010). At the group level, index of shared leadership is derived by calculating the sum of differences in centrality between the most central node in the network and all other nodes (D'Innonenzo, 2014). A highly centralized network suggests that there are one or maybe two members in the network who are recognized as leaders. The less centralized the network is, the more likely it is that leadership is shared among network members (Mayo et al., 2003). In general, shared leadership can empirically be operationalized as network density, network centralization, or as quantity of leadership in teams derived from aggregated survey responses (Small & Rentsch, 2010).

Shared leadership findings. The appeal of shared leadership is in that it is expected to improve team performance, above and beyond the effects of vertical leadership. Indeed, several recent meta-analyses confirmed a positive relationship between shared leadership and team outcomes. Wang, Waldman and Zhang (2014) found an overall moderately positive relationship between shared leadership and team effectiveness ($\rho = .35$), and an even stronger relationship between shared leadership and team attitudinal outcomes ($\rho = .45$), and shared leadership and behavioral processes/ emergent states ($\rho = .44$). In addition, they found that the effects of shared leadership strengthened with the increase in work complexity.

D’Innocenzo and colleagues (2014) also found a significant positive relationship with team performance, although, in their meta-analysis, the complexity of the team task was negatively related to the shared leadership – team performance relationship. Another important result of this meta-analysis was that the network approach yielded higher correlations when compared to aggregation conceptualization of shared leadership. In another meta-analysis, Nicolaides and colleagues (2014) confirmed the positive effect of shared leadership on team performance, and found this relationship to be particularly strong when interdependence among team members is high. Using network centrality in a longitudinal study of shared leadership, Small and Rentsch (2010) also found shared leadership to relate to team performance, and found the degree of shared leadership to increase over time. Moreover, other empirical studies have demonstrated that shared leadership is related to objective measures of team performance (Mehra et al., 2006; Caron et al., 2007; Pearce & Sims, 2002), subjective measures of team effectiveness (Avolio et al., 1996; Pearce et al., 2004), team learning (Liu, Hu, Li, Wang and Lin, 2014), satisfaction (Avolio et al., 1996), group potency (Avolio et al., 1996; Pearce et al., 2004), social integration (Pearce et al., 2004), and problem solving quality (Pearce et al., 2004).

As evidenced by the number of studies on shared leadership, research interest in this topic has grown steadily over the last 20 years. Despite the progress that has been made, there is still much to be uncovered in empirically validating

various conceptual models of shared leadership, and identifying its boundary conditions and mediating processes (Nicolaidis et al., 2014). A more nuanced understanding of the nature of shared leadership and its emergence in the teams is critical for further advancements in this arena (Carson et al., 2007; Nicolaidis et al., 2014; D’Innocenzo et al., 2014). The logical starting point in this process is to assess the extent to which existing theories of leadership, such as implicit leadership theories (ILTs), apply to the shared leadership context.

Implicit Leadership Theories

Ever since Eden and Leviatan (1975) radically proposed that “leadership factors are in the mind of the respondent” (p. 741), ILTs have been at the forefront of leadership research. Part of the broader socio-cognitive approach, ILTs are grounded in the notion that people rely on cognitive structures to process information. In general, cognitive structures are derived from unconsciousness schemas - broad, organizing frameworks that guide our understanding of events and help us make sense of context and experience (Gioia & Poole, 1984; Avolio, Walumba, & Weber, 2009). When schemas describe sequences of events or behaviors appropriate for a particular context, they are called scripts, and scripts are responsible for guiding our behavior in a given situation (Gioia & Poole, 1984). Schemas and scripts are organized in cognitive categories, each of which is represented by a set of prototypes (Lord, Foti, & De Vader, 1984). Events around us (i.e., people and their behaviors) are constantly compared to prototypes

representing their respective categories. If there is a match, the event activates the corresponding schema (perception) and/or script (behavior). This process of categorizing and matching is the core mechanism of our information processing.

Lord (1985) was among the first to apply cognitive categorization theory to leadership. He proposed that individuals evaluate leaders by matching them to a prototype and classifying them accordingly. In this process, individuals rely on unconscious schemas about traits and abilities that differentiate ideal leaders (prototypical) from non-leaders (anti-prototypical; Epitropaki and Martin, 2004; Shondrick et al., 2010). Similarly, implicit followership theories (IFTs) explain matching of individuals' cognitive schemas about followers to the relevant prototypes (Uhl-Bien, Riggio, Lowe, & Carsten, 2014). This quick, efficient, and unconscious process simplifies information processing demands with minimal cognitive effort (Ehrhart, 2012), and it applies not only to the view of others, but also to the notion of self, and to the relationship between one's self and others (Lord, Brown, & Freiberg, 1999).

The potential role of ILTs in understanding leadership was not always recognized. Early studies focused on ILTs as a source of measurement bias (e.g., Eden & Leviatan, 1975; Rush, Thomas & Lord, 1977; Weiss & Adler, 1981), and the empirical results mostly confirmed that the widely used leadership questionnaires captured more of the perception of leadership behavior than the actual behavior (Bryman, 1987). The finding that "it is the interpretation of the

behavior, not behavior per se, that impacts on leadership relationships” (Engle & Lord, 1997, p.991) led to a significant shift in leadership research from focusing on leader effectiveness and performance to examining the perceptual processes underlying leadership (Epitropaki & Martin, 2004). As a result, ILTs became a new framework for explaining leadership relationships, especially in dyadic functioning, as they could simultaneously guide a person’s behavior and his or her interpretation of the behavior of others (Lord & Maher, 1991; Engle & Lord, 1997).

Since then, much has been written about ILTs on a conceptual level. Empirically, however, research mostly focused on identification and classification of leadership prototypes and the generalizability of ILTs across individuals, cultures, and according to demographic factors (Carnes, Houghton, & Ellison, 2015). This stream of research provided evidence both for the generalizability of and for the unique variance in ILTs (Epitropaki, Sy, Martin, Tram-Quon, & Topakas, 2013). In support of the generalizability of ILTs, research suggests that: 1) people have distinct prototypes of leaders and followers (Engle & Lord, 1997; Carsten, Uhl-Bien, West, Patera, & McGregor, 2010), 2) these prototypes are a combination of distinct trait-like factors that define implicit theories (i.e., for leaders: intelligence, sensitivity, dedication, masculinity, etc.; Offerman, Kennedy, & Wirtz, 1994; Epitropaki & Martin, 2004), 3) prototypes and their defining factors overlap somewhat across gender of a perceiver (Offerman, Kennedy, & Wirtz, 1994) and across different employee groups (Epitropaki & Martin, 2004), and 4)

ILTs seem to be relatively stable across time (Epitropaki & Martin, 2004). However, other studies have found differences on certain dimensions between woman and men (Deal and Stevenson, 1998; Johnson, Murphy, Zewdie, & Richard, 2008), and identified rater and target characteristics, and their interaction, as significant sources of variance in ILTs (Weidner, 2012). Moreover, cross-cultural research on ILTs shows that some characteristics of ILTs are universal while others differ across cultures (House et al., 1999). In terms of work-related outcomes, the most significant findings indicate that when leader's and follower's behavior is congruent with individual's implicit theories, not only is that behavior perceived as more effective (Abdalla & Al-Hamoud, 2001; Porr & Fields, 2006), but it also leads to better relationship quality and trust (Sy, 2010), job satisfaction (Epitropaki & Martin, 2005; Sy, 2010), and organizational commitment (Epitropaki & Martin, 2005).

One area of ILT research that remains largely unexploited is the examination of prototype antecedents. It is generally assumed that prototypes are developed through early socialization process, and that they evolve from a combination of childhood experiences with close role models, such as parents or caregivers (Keller, 1999, 2003). Although very few studies actually examine the origins of ILTs, there are some new lines of research into trait and state affect, which have both been found to contribute to the activation of leadership schemas (Epitropaki et al., 2013).

In addition to understanding the origins of ILTs, leadership research is presently facing two other important challenges: 1) applying ILTs to the new forms of dynamic leadership, where multiple individuals perform leadership roles (e.g., shared leadership; Shondrick, Dinh, & Lord, 2010), and 2) developing a more nuanced understanding of how cultural values shape ILTs (Carson, 2005; Pearce, 2003; Pearce & Locke, 2008).

Implicit leadership theories and shared leadership. Implicit theories work especially well in a traditionally stable, hierarchical structure where leadership behavior, defined as a form of influence (Yukl, 2002, 2012; Yukl, Gordon, & Taber, 2002) flows uni-directionally from a single leader to his or her followers. In shared leadership, the leadership influence is reciprocal and distributed between team members (Carson et al., 2007). In this context, shared leadership emerges as a product of a series of interactions and perceptions of those interactions by the team members who, by alternating between the role of a leader and the role of a follower, collectively exert influence (Shondrick et al., 2010; Drath et al., 2008). In such dynamic, interactive systems, the role of implicit theories becomes less clear. As leadership role switches from one member to another, how is the individual's perception of leadership affected? Are ILTs and IFTs, which are presumed to be relatively stable cognitive representations, activated, deactivated or modified every time the role changes?

To account for the dynamic nature of this qualitatively different team process, new conceptualizations of leadership have been proposed. In particular, leadership is increasingly described as a relational process that emerges from dynamic interactions of team members who occupy fluid and interchangeable roles (Drath et al., 2008; Nicholaides et al., 2014). In addition, leadership is often conceptualized from a network perspective, and seen as situated in a context, reflecting patterns of relationships, and exerting both formal and/or informal influence (Carter, DeChurch, Braun, & Contractor, 2015). Traditional implicit leadership and followership theories do not fully capture such new forms of collective leadership. Recently, several new refinements of basic leader categorization theory have been proposed (Epitropaki et al., 2013; Shondrick et al., 2010). Connectionist-based model, proposed by Hanges, Lord, and Dickson (2000), explains leadership perceptions not as stable and permanent representations, but as contextually sensitive leadership categories that emerge by combining information from multiple sources, including context, task, individual, and social systems (Lord et al., 2001). Drawing from recent advancements in cognitive theory, this model focuses primarily on the schema activation processes that underlie ILT and IFT formation. Similarly, Shondrick and Lord (2010) adopted a dynamic approach by proposing that the existing leadership categories are constantly modified on the basis of inputs from the environment, while entirely new categories are created when there is an unsuccessful match (Shondrick & Lord,

1010; Epitroaki et al., 2013). Although these new approaches are useful in advancing our theoretical knowledge of perceptual and memory processes that affect both the formation of ILTs and that of leadership measurement, they have placed little emphasis on the practical application of ILTs in organizations, and especially their implication for collaborative work and new leadership structures.

To specifically address shortcomings of current implicit theories in the shared leadership context, Scott and colleagues (accepted for publication) propose an integration of implicit theories and leadership structure in Implicit Leadership Network Theories (ILNTs). This multilevel framework considers individual's implicit theories regarding expected and acceptable leadership organization and distribution within the group (network ILNTs), and self-schemas regarding the individual's role and place within their network (self-ILNTs). The resulting typology of various team compositions predicts patterns of shared leadership emergence in teams and has some potentially useful applications in terms of team selection, leadership intervention, and team training. What exactly contributes to the network formations, however, remains an important theoretical and practical question. There have been repeated calls among shared leadership scholars to examine the individual characteristics of the team members, especially receptivity to lateral influence (Carson, 2005; Nicolaides et al., 2014; Pierce and Cogner, 2003; Pearce, Hoch, Jeppesen, & Wegge, 2010; Pearce & Wassenaar, 2014). Among those, cultural values, particularly power distance and collectivism, have

been identified as most likely to have an impact on the emergence of shared leadership in a global work context.

Cultural Values Frameworks

In everyday language, the term culture is used broadly to describe anything from attributes of an individual, characteristics of an organization, to symbolic markers of a nation. When applied to groups of people in organizations, societies, or nations, culture represents a shared set of values and beliefs that differentiate one group from another (Hofstede, 2001; House, Javidan, Hanges, & Dorfman, 2002). As such, culture has become one of the defining aspects of our individual and group existence, the one that allows us to both identify with and differentiate from other humans (House et al., 2002).

Not surprisingly, the study of culture has spanned many disciplines (anthropology, sociology, cross-cultural and organizational psychology, business and management studies, among others) and has resulted in number of proposed cultural frameworks over the years (Taras, Kirkman & Steel, 2010). Among them, one of the most influential and most widely cited is Hofstede's framework. After conducting a worldwide study of IBM employees' values in the late 60's and early 70's, Hofstede proposed that cultural values could be analyzed along six dimensions: individualism-collectivism, uncertainty-avoidance, power distance, masculinity-femininity, long-term orientation, and indulgence-restraint (Hofstede, 1980; Hofstede, 2001; Taras et al., 2010). According to Hofstede (2001), these

dimensions represent relative societal preferences for “one state of affairs over others” (p.15). For example, individualism represents preference for loose ties with larger social groups, whereas collectivism describes preference for tightly integrated relationships with the extended family and larger social groups. A recent meta-analysis by Taras and colleagues (2010) examined empirical results of studies employing four of Hofstede’s cultural value dimensions (individualism-collectivism, power distance, uncertainty avoidance, and masculinity-femininity) and found a significant relationship between cultural values and attitudes and perceptions ($\rho = 0.20$).

Building on Hofstede’s model, Schwartz (1994, 1999) expanded the theory of cultural values to include seven national cultural dimensions derived from responses to three basic issues that all societies must face: 1) what is the relationship between individual and the group, 2) how to guarantee responsible social behavior, and 3) what is the relation of the human kind to the natural and social world. Cultural variations in addressing these issues form a unique national profile represented by nation’s standing on the dimensions of harmony, egalitarianism, autonomy, mastery, hierarchy, and conservatism. Unlike Hofstede’s model, which only focused on country-level values, Schwartz (1999, 2012) also proposed ten individual-level values organized in a circular structure that represents a motivational continuum. The closer the two values are in a circle, the more their underlying motivations are similar. For example, values of achievement and power

share some similarity because they both focus on social esteem. Values that are further apart represent less compatible motivations. For example, benevolence and power are antagonistic values because benevolence promotes cooperative and supportive social relationships, whereas power emphasizes dominance over people and resources.

The third well-known value-based typology was derived from the Global Leadership and Organizational Behavior Effectiveness (GLOBE) project (House et al., 2004). The GLOBE study was the first to examine the relationship between cultural values and leadership. Starting from a proposition that cultural values are likely to shape individual beliefs about what constitutes an effective leadership (Javidan, Dorfman, de Luque, & House, 2006), the GLOBE study extended implicit leadership theories to the cultural level of analysis by proposing that the leadership prototypes are shared among individuals from the same culture. Specifically, the authors proposed that the individual's implicit theories about personality traits, skills, behaviors and leadership styles of effective and ineffective leaders are often a reflection of broader cultural values of that individual and the group, organization or a society in which they are embedded (Lord & Alliger, 1985; Javidan et al., 2006; Kirkman, Chen, Farh, Chen, & Lowe, 2009). Subsequently, those shared cultural belief systems, also known as *culturally endorsed implicit leadership theories* (CLTs), have been empirically tested through the extensive GLOBE research project. The results confirmed that individuals

within cultural groups generally agree on their view of leadership and that those beliefs can be represented by a set of leadership profiles specific to each national culture (Javidan et al., 2006). The GLOBE study produced a typology of cultural values consisting of nine dimensions that bear some similarity to Hofstede's model. Power distance and uncertainty avoidance are the same in both models; the individualism-collectivism dimension is divided into *institutional collectivism* and *family*, or *in-group collectivism*, while masculinity-femininity dimension is represented with *assertiveness* and *gender egalitarianism*. The GLOBE study also identified two new dimensions: *performance orientation* and *humane orientation* (House et al., 2002).

Among cultural values, power distance appears to be of significant relevance to studies involving groups and types of influence (Carson, 2005). In particular, the relational nature of shared leadership as the distribution of mutual influence within a group suggests that the construct of shared leadership might be closely related to power distance.

Power Distance

Distribution and exercise of power and influence are fundamental to all organizational relationships, are inherent in most leadership structures, and are known to affect many organizational processes and work-related outcomes (Keltner, Gruenfield, & Anderson, 2003; Daniels & Greguras, 2014). Not surprisingly, the dimension of power is present in almost all known taxonomies of

individual and cultural values. In the organizational research, power is most frequently examined as *power distance* (Erez, 2011). Power distance refers to the degree to which individuals, groups, or societies accept unequal distribution of power in institutions and organizations as legitimate, functional, or unavoidable (Hofstede, 1980). The extent to which societal or organizational inequalities are accepted shapes the beliefs (often unconscious) about how those with differing levels of power should behave and interact (Javidan & House, 2001).

Power distance beliefs can be held at the individual, group, organizational, and societal level; consequently, research suggests that, across these different levels, power distance relates to different criteria and produces different outcomes (Taras, Kirkman, & Steel, 2010). For example, individuals high on power distance tend to believe that authority figures should be respected and not questioned (Yang, Mossholder, & Peng, 2007). Indeed, research confirms that power distance is negatively correlated with individuals' perceptions of participative leadership, feedback seeking, team commitment, and teamwork preference (Taras, Kirkman, & Steel, 2010). At the group level, low power distance is expected to translate into a higher degree of participative decision-making and preference for teamwork (Daniels & Greguras, 2014). Research finds that low power distance is positively related to group cooperation and team performance (Taras, Kirkman, & Steel, 2010).

At the organizational level, power distance values and beliefs are linked to the choice of human resource management practices both directly (through legal requirements) and indirectly (through leaders and leadership), as well as to the choice of performance management and personnel selection systems (Daniels & Greguras, 2014). For example, Peretz and Fried (2012) found that power distance negatively correlated with the number of rating sources used in appraisals. Similarly, Ryan, McFarland, Baron, and Page (1999) found that organizations with high power distance value tended to shy away from having peers interview job candidates in the selection process. Finally, on a societal level, high power distance represents a shared acceptance of inequality that often translates into policies and behaviors that result in the actual experience of inequality (Hofstede, 1980); at the same time, high power distance cultures place considerable amount of pressure on its people to conform to strict, traditional social norms and not to challenge the status quo (Daniels & Greguras, 2014). Empirically, this is supported by the findings that power distance negatively relates to the weighted index of social progress of the nations (WISP), which includes dimensions such as basic human needs, wellbeing, and opportunity (Sharma, 2003; Daniels & Greguras, 2014).

Besides recognizing the differences in criteria and outcomes, considering the level of analysis when conceptualizing and measuring power distance is also important from the methodological perspective. Hofstede himself warned against inappropriate generalization of results obtained on one level of analysis to another

level (2001). Most common concern in this area is applying group level findings to the individual level and vice versa, and using Hofstede's database to assign cultural values to individuals based on their nationalities (Daniels & Greguras, 2014). Apart from the concerns about the level of analysis, Taras, Kirkman, and Steel (2010), in their meta-analysis of studies using Hofstede's cultural value dimensions, found very little variation in how power distance was defined in most studies and concluded that the measurement instruments are highly consistent with Hofstede's initial operationalization. These findings provide support for the use of a similar conceptualization and the measurement of power distance in the current study.

Power distance and implicit leadership theories. Although the GLOBE study explored the combination of all cultural values and not power distance per se, the results clearly suggest that power distance plays an important role in shaping beliefs about many organizational behaviors. For example, high power distance impedes participative decision-making processes, and manifests itself in the preference for hierarchical organizational structures, and strong reverence and deference toward leaders (House, Javidan, Dorfman, and Gupta, & GLOBE Associates, 2004). In a study that specifically examined the impact of individual level power distance on effects of transformational leadership, Kirkman and colleagues (2009) found that power distance played a significant direct role in shaping follower's reactions to transformational leadership, as well as an indirect

effect, through perception of procedural justice, on their organizational citizenship behaviors. Similarly, Stock and Ozbek-Potthoff (2014) found that power distance had a significant moderating impact on the relationship between charismatic leadership and subordinates' identification with the leader. Additionally, research has shown that subordinates in cultures with high power distance accept leader's failures more than do those in low power distance cultures (Dickson et al., 2003).

Power distance and shared leadership. The importance of cultural values in the emergence and development of shared leadership has been acknowledged conceptually, but barely studied empirically. Of all the cultural values, power distance is believed to be the most important variable in predicting the emergence of shared leadership, as the core notion of shared leadership is fundamentally about accepting more equal and reciprocal distribution of power and influence (Carson, 2005). Shared leadership is possible only if the individuals feel empowered to participate in the leadership of their group, feel comfortable in setting the direction and goals of the group, and are willing to support leadership of other members of the group (Pearce, 2003; Carson, 2005). It follows logically that these processes are far less likely to occur when participants are high in power distance, as these individuals prefer distinct social roles and expect unequal, hierarchical distribution of power (Carson, 2005). Similarly, Pearce (2008) has proposed that some resistance to shared leadership might stem from high power distance orientation at

the national level. Data from the GLOBE study provides indirect support for this proposition: the countries with high power distance score are known for authoritarianism, strict order, and preference for centralized decision-making process in their institutions, while the countries with low power distance are characterized with preference for egalitarianism, decentralized decision-making, and participative work environments (Pearce and Wassenar, 2014). Despite the potential impact that power distance may have on the emergence and the effectiveness of shared leadership, this relationship remains largely unexplored to date. This study aims to address this gap by specifically exploring the dynamics of power distance-shared leadership relationship.

Hypothesis Development

Conceptually, most definitions of leadership revolve around two aspects of leadership process: influencing others and facilitating collective efforts toward accomplishment of common objectives (Yukl, 2002). When this process is in the hands of a single individual, as is often the case in the traditional hierarchical structures, leadership has been operationalized in terms of leader traits (i.e., personality, abilities, motives, and values), leader behaviors (i.e., task-oriented, relations-oriented, or change-oriented), leader styles (i.e., charismatic, transformational, transactional, etc.), and contingency factors (i.e., leader-member relations, motivation, task structure, etc.; Lord, 1977; Zaccaro, 2007; Jex & Britt, 2014). Empirically, most of the leadership research has been preoccupied with

identifying types of leadership behaviors that result in the effective performance of individuals, teams, and organizations (Yukl, 2012).

Early research focused on the relationship between the actual behavior of the leader and the ratings of leadership, but these efforts were greatly hampered by the measurement issues. Specifically, there was growing evidence that the most popular research instruments, the leadership questionnaires, were more the measures of raters' perception of leaders than the measures of leadership behavior *per se* (Bryman, 1987). As a result, the focus of leadership research shifted almost entirely to the perceptions of leadership behavior, while the operational definitions of leadership became increasingly focused on capturing the leadership relationship, i.e., the social and relational process between the leader and the follower (DeRue, & Ashford, 2010). Although leadership process clearly contains both the perceptual and the behavioral component, most research generally infers the latter by measuring the former.

When considering shared leadership conceptually, the traditional definition of leadership is expanded to include multiple sources of leadership so that the influence becomes mutual, leadership behaviors are performed by more than one team member, and the responsibility for goal attainment is shared (Carson et al., 2007; Pearce & Conger, 2003; D'Innocenzo et al., 2014; Nicolaidis et al., 2014; Wang et al., 2014). Operationally, shared leadership can be defined in terms of its content and its processes. When focus is on the content, leadership styles and

behaviors are examined, similarly to traditional leadership. A wide range of leadership styles can be covered, such as transformational, charismatic, empowering, or authentic leadership. Similarly, leadership behaviors can include anything from exchanges between leaders and followers and attending to the interpersonal relationships of team members, to planning, organizing, and problem solving, attending to the task or creating a shared team vision (Wang et al., 2014).

In shared leadership contexts, leadership behaviors are exhibited by any number of team members and not solely by the hierarchical leader, and they are directed from one member to another(s); Wang et al., 2014). Such conceptualizations of shared leadership offer a possibility of the behavior being observed externally and assessed using objective measures; however, the majority of empirical studies take a different approach. Most commonly, shared leadership is seen as a process of leadership influence, and is operationalized as the extent to which individual members perceive it as leadership (D’Innocenzo et al., 2014; Nicolaides et al., 2014; Wang et al., 2014). The shared leadership score for the team is obtained either by aggregating team members’ ratings of the leadership influence of the team as a whole, or by averaging team members’ ratings of the leadership influence of each other individual team member. In either approach, the content of leadership, i.e., specific leadership behaviors, is usually not specified. Instead, it is the extent to which team members perceive others in the team as leaders in a generic sense that is measured (Wang et al., 2014).

However, just as is the case with traditional hierarchical leadership, the fact that we mostly measure the perception of shared leadership does not imply that there is not an observable behavioral component to it as well (Shondrick et al., 2010). In fact, observing the behavior serves as one of the important inputs into forming a perception of that behavior; it follows that in a shared leadership context, what team members perceive as shared leadership would be based to some extent on the actual behavior and actions of the team members.

At its core, perception is a sense making process whose purpose is to interpret the behavior of others and to produce one's own response (Lord & Maher, 1991). This process does not occur in a vacuum; rather, individuals typically become aware of the salient features of the context in which they operate either by being explicitly informed about these features or by independently observing cues in their environment (Cronshaw & Lord, 1987; Lord & Maher, 1991; Lord & Emlich, 2001; Schondrick et al., 2010). These environmental cues (e.g., goals, objectives, tasks, leadership structure or lack thereof, among others) serve two purposes: 1) to activate relevant scripts guiding individual team members on how to behave in that context (Gioia & Poole, 1984; Poole, Gioia & Gray, 1989; Lord, Foti, & De Vader, 1984), and 2) to direct team members' attention to relevant features or behavior of others. In other words, the context in which observation occurs serves as a cue for focusing attention on certain behaviors, and not on others (Murphy & Cleveland, 1995).

Once the behavior of others is attended to (i.e., observed), that behavior also becomes a cue activating the process of its interpretation (Lord et al., 1999; Lord & Emlich, 2001). This mostly unconscious interpretive process is essentially the comparison of the observed behavior to some implicitly held schema about prototypical behavior relevant to the context (Cronshaw & Lord, 1987; Ehrhart, 2012; Engle & Lord, 1997; Epitropaki & Martin, 2004; Epitropaki & Martin, 2005). When individuals come together on a team, each member holds his/her own implicit theories regarding leadership; the more the behavior of others matches the team member's implicitly held leadership schemas, the more likely they are to interpret that behavior as leadership, and by extension, to form the overall perception of that team member as a leader (Shondrick et al., 2010; Uhl_Bien et al., 2007; Weiss & Adler, 1981). Thus, we would expect that observed leadership behavior, as enacted by the team members, would serve as an environmental cue that is interpreted as leadership when it matches implicitly held leadership schemas, and as such, that it is related to the perception of leadership influence.

The first purpose of this study is to examine the relationship between the behaviorally-enacted shared leadership within the team and the individual team member's perception of leadership influence among team members. To this author's knowledge, only Lord (1977) has so far examined the relationship between the leadership behavior and its perception. In his study, he defined twelve categories of functional leadership behaviors, recorded teams' communication,

coded it based on these categories, and then examined the relationship of functional behavior to leadership perceptions. Based on the findings, he concluded that functional leadership behavior and leadership perception “should be viewed as separate, but related, leadership processes” (p. 129).

For the purposes of this study, we adopt Carson et al.’s (2007) definition of shared leadership as the distribution of leadership influence across multiple team members, and further expand on the findings of Lord’s study by proposing that, in the shared leadership context, the enactment of leadership influence can be observed via team’s verbal communications. As suggested by De Rue and Ashford (2010), leadership influence can be understood as a series of leading and following interactions, in which the team members take on leader and follower roles through a reciprocal and mutually reinforcing social process consisting of two parts: “claiming” the identify of the leader and “granting” or affirming that identity by the follower. Leadership influence is realized when “claims” are reciprocated by “grants”, and vice versa (De Rue & Ashford, 2010).

“Claiming” and “granting” refer to actions people take to either assert themselves as leaders, or to endorse someone else as a leader (De Rue & Ashford, 2010). One of the most common leader actions is providing direction on what needs to be done and how, and this action alone might be sufficient when one is formally appointed as a leader; however, when it comes to assuming the role of the leader informally, it is likely that additional actions are needed. Klein, Ziegert,

Knight, and Xiao (2005) conducted one of the few studies to identify additional leadership functions through qualitative analysis. Using a grounded theory approach, they examined the leadership of medical teams in an emergency trauma center and found that the four core leadership functions were 1) providing direction, 2) monitoring, 3) providing hands-on treatment, and 4) providing guidance and teaching other team members.

Carson and colleagues (2007) found that an important antecedent to the development of shared leadership is the internal team environment consisting of three dimensions: shared purpose, social support, and voice. Based on those findings, it could be argued that any team member assuming the role of the informal leader would take on actions that lead to shaping of the internal team environment. For example, by acknowledging and encouraging individual and collective contributions, the informal leader would not only provide the emotional and psychological support to the team members directly, but would also create an environment where others feel their actions are valued and welcomed; in return, team members would be more likely to engage in collaboration and develop a sense of shared purpose (Carson et al., 2007; Kirkman & Rosen, 1999; Marks et al., 2001). Together, those actions produce the internal team environment that enables shared leadership to emerge (Carson et al., 2007). Similarly, when team members follow the directions of others on the team, seek their guidance, or respond to requests, they are in fact “granting” leadership by accepting the influence of their

fellow team members. Summary of commonly used leadership categories in literature is presented in Table 1.

Drawing on these findings, we operationalize behaviorally-enacted shared leadership as the observable occurrence of the following types of verbal communications: 1) *offering leadership* by: providing direction (suggestions or directives on how and what needs to be done), providing purpose (identifying and reminding team members of the team goals), and providing support (encouraging team effort and accomplishment of goals, praising successful action, offering assistance or encouragement to the individual team members), and 2) *accepting leadership* by: following directions or suggestions of the other team members, responding to requests for information, and seeking direction from others on the team. We expect to find that there is a positive relationship between shared leadership behaviors within a team and the perception of shared leadership.

Hypothesis 1: Behaviorally-enacted shared leadership of the team will be positively related to the individual team member's perception of shared leadership influence.

Table 1. Leadership and Followership Behavioral Categories in Literature

Coding categories and subcategories	Similar concepts found in literature						
	Carsten et al., (2010)	Huettermann (2014)	Yukl et al., (2002)	Lord (1977)	DeRue et al., (2010)	Klein et al., (2006)	Bjugstad et al., (2006)
Accepting leadership					Granting leadership identity		
Offering leadership		Providing guidance		Initiating behavior	Claiming leadership identity	Monitoring	
Providing direction	Taking ownership	Directing members	Short-term planning	Developing plans		Provide hands-on treatment	
Providing purpose	Mission conscience	Clarifying team goals	Clarifying	Proposing solutions			
Providing support	Empowering work climate	Encouraging Involvement	Supporting	Coordinating or directing behavior		Provide strategic direction	
Following directions			Recognizing	Developing a positive group atmosphere		Teach other team members	
Responding to a request							Involvement through participation
Seeking direction					Mutual process of claiming and granting		Doing as requested

Further, it is expected that although related, the perception of shared leadership influence will not be an entirely faithful replication of what was observed, and that there will be individual differences in the degree to which the shared leadership influence is perceived as such by individual team members. Intuitively, we know that there are as many perceptions of any given event as there are people observing it. Cognitive theories suggest that the reason we differ in how we perceive events is because we interpret things according to our individual schemas. When it comes to traditional leadership, ILTs have been a useful framework for understanding individual differences in perception. In a stable, hierarchical organizational structure, where a leader is clearly identified and the leader role is unambiguous, the comparison of the formal leader to the internally held prototype provides a plausible explanation of how the perception of leadership is formed (Epitropaki & Martin, 2004, 2005; Lord & Maher, 1991). However, in a dynamic, interactive system, such as shared leadership, the mechanism of implicit leadership theories becomes complicated. To begin with, which schemas are activated in shared leadership context? Shared leadership is not nearly as widespread a concept as traditional form of leadership, and it seems unlikely that most people would have an implicit schema specific to it. Perhaps, shared leadership context activates different schemas simultaneously, and it is through the

interaction and integration of the existing ILTs, IFTs, and schemas about teamwork that shared leadership is processed and interpreted.

Scott and colleagues (accepted for publication) propose such integration in their Implicit Leadership Network Theories (ICLTs) model: individual's implicit theories regarding expected and acceptable leadership organization and distribution within the group (network ILNTs) are combined with self-schemas regarding the individual's role and place within their network (self-ILNTs). The result is a large number of possible ILNT configurations that predict patterns of shared leadership emergence (Scott et al., 2016). While acknowledging the probable complexity of the integration of various schemas that are likely to occur in a shared leadership context, we propose that, in this case, most implicit theories, including self and network ILNTs, would be centered on schemas about the distribution of influence, and by extension, the distribution of power. The distribution of mutual influence across multiple team members would rest upon team members' acceptance of egalitarian leadership structures in which team members perform most of the leadership functions, regardless of the presence or absence of an appointed leader (Scott et al., accepted for publication). The degree to which individual team members enact leadership behavior would largely be driven by person's self-schema regarding their own behavior and influence within network. In this context, both the person's self-schema and their leadership network preference would be affected by the individual's power distance orientation. On an individual level,

power distance orientation is important because it shapes one's expectations as to how individuals with different levels of power and influence should interact (Javidan & House, 2001), therefore impacting relationships within the teams, and within organizations.

Thus, the second purpose of this study is to examine the relationship between individual's power distance beliefs, and his or her perception of the shared leadership influence. In line with most of the research on power distance, we make the distinction between individually held beliefs termed *power distance orientation*, and power distance as measured at the country level (which is not examined in this study).

We propose that individual's power distance orientation will impact if, and to what extent, individuals perceive behavior of other team members as shared leadership. For leadership behavior to actually be perceived as such, team members must believe that accepting influence from laterally positioned team members is appropriate, valuable, and constructive (Carson et al., 2007). Given that the high power distance orientation is incongruent with equal and mutual distribution of influence that is inherent in shared leadership, we propose that the effect of power distance on shared leadership would be manifested in two ways. First, power distance orientation would have a direct effect on individual's perception of shared leadership influence. In a sense, individuals with high power distance orientation expect leadership behaviors to come from those who are positioned above them,

either by a formal role, or by a social status. Even when team members exhibit behaviors consistent with leadership, individuals with high power distance orientation are less likely to attend to those behaviors, and subsequently interpret them as leadership, because the behaviors are coming from an unexpected source, i.e., team members that occupy equal position to them. Therefore, when high power distance orientation is present, it will constrain individual's perception of shared leadership emergence in the team. Alternatively, low power distance orientation is congruent with the concept of shared leadership, and thus, it would enhance individual's perception of shared leadership emergence.

Hypothesis 2: An individual's power distance orientation will be negatively related with his/her perception of shared leadership influence.

Second, power distance orientation would have a moderating effect on the relationship between behaviorally-enacted shared leadership of the team and the individual's perception of the shared leadership. Empirical evidence suggests that high power distance attenuates the relationship between attitudes and perceptions on one hand, and behavior on the other. For example, Fahr, Hackett, and Liang (2007) found weaker relationships between perceived organizational support and job performance, commitment, and organizational citizenship behaviors when individual's power distance was higher. Drawing on those findings, it is reasonable to expect that the relationship between behaviorally-enacted shared leadership and the perception of shared leadership would be similarly affected.

Hypothesis 3: Individual power distance orientation will moderate the relationship between behaviorally-enacted shared leadership of the team and the individual's perception of shared leadership influence such that the relationship will be weaker when individual power distance orientation is high.

The third purpose of this study is to assess the effect of the team-level power distance climate on the emergence of the behaviorally-enacted shared leadership. In general, a team's climate refers to the shared perceptions among team members with regards to acceptable and desirable behaviors and practices (Schneider, Salvaggio, and Subirats, 2002; Schnedier, Ehrhart, & Macey, 2013; Zohar, 2000). In organizational research, safety climate, innovation climate, and customer service climate were all extensively studied and found to have direct, moderating, and mediating effects on various work and performance outcomes (Schnedier et al., 2011). In leadership research, team climate was found to be both an antecedent of and the outcome of leadership (Dragoni, 2005; Zohar, 2000; Zohar & Tenne-Gazit, 2008).

When extended to represent power distance at the team level, power distance climate refers to the extent to which team members share the expectation and/or the acceptance of unequal power distribution within the team (Chen et al., 2007; Hofmann et al., 2003; Liao & Chuang, 2007; Schaubroeck et al., 2007). Therefore, individual power distance orientation likely plays an important role in the emergence of a team climate that either promotes or suppresses shared

leadership. Indeed, research has found that the power distance climate was negatively related to productivity of self-managed teams, performance of self-managed teams, mutual support among team members, and knowledge sharing (Chan, 1998; Drach-Zahavy, 2004; Yilmaz et al., 2005).

The most common way to operationalize climate variables is a direct-consensus model, which assesses shared perceptual agreement at the individual level; the resulting measure is the index of within-group agreement (Chan, 1998; Schneider et al., 2002). However, for the present study, we adopt a dispersion approach, which primarily assesses climate strength by measuring the variance or standard deviation of the individual level values (Gelfand et al., 2008). Although less common, this approach is more appropriate for the current study because the focus is not on how individual members perceive the team's power distance climate (which would be better assessed by direct consensus or referent-shift consensus model), but on the extent to which team members differ or align on their individual power distance orientation and the environmental context that this dispersion of values creates. Similar power distance orientation of team members is interpreted as a strong climate; when team members differ, it is interpreted as a weak climate. Strong climate reflects situations when team members perceive events in the same way, have very similar expectations about the appropriate and desirable behaviors, and subsequently exhibit similar behavior. Weak climate, by contrast, is when team members have very different expectations of appropriate behaviors, and genuinely

do not perceive events in the same way (Schneider, Salvaggio, and Subirats, 2002).

For shared leadership to occur, it is important that team members are willing to both offer and accept leadership, which translates to an acceptance of equal and mutual distribution of power and influence. When team members share similar power distance orientation, it is likely to result in a strong power distance climate in the team (either high or low), and when the team members differ with respect to their power distance orientation, it is likely to result in a weak climate. Weak power distance climate would suggest that team members do not share similar assumptions with respect to shared leadership, thus making shared leadership less likely to emerge. In a strong power distance climate, team members would have similar assumptions about shared leadership, but only low power distance orientation would be congruent with the emergence of shared leadership. Low power distance orientation usually reflects preference for and acceptance of egalitarian leadership structures, as well as willingness to participate and contribute to sharing of leadership functions. Clearly, if all team members agree on that point, they are more likely to provide and accept mutual leadership. Conversely, individuals who have high power distance orientation tend to prefer more hierarchical team structure and might be less comfortable when there is no appointed leader. Moreover, individuals with high power distance orientation typically show resistance to participative decision-making, and consultative

leadership (Hofstede, 1980; Taras et al., 2010). It is to be expected that shared leadership, at least initially, would feel uncomfortable to those with high power distance orientation, and that they would likely respond by refraining from sharing leadership functions as they try to maintain some social distance. When the team consists of members who have similarly strong power distance orientation, this team climate would not be conducive to shared leadership emergence. Therefore, we propose the following:

Hypothesis 4a: Strong-low power distance climate will positively relate with the emergence of behaviorally-enacted shared leadership within the team.

Hypothesis 4b: Strong-high power distance climate will negatively relate with the emergence of behaviorally-enacted shared leadership within the team.

Hypothesis 4c: Weak power distance climate will negatively relate with the emergence of behaviorally-enacted shared leadership within the team.

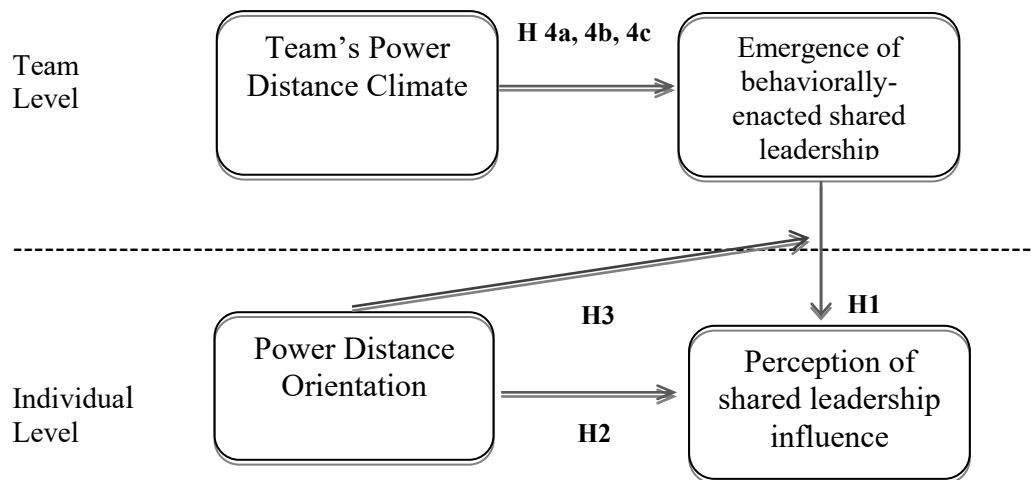


Figure 1. Hypothesized Model

Methods

Participants

The study used the archival data available from a research lab at a mid-size university in the southeastern United States. The research lab conducts an on-going team study using Artemis Spaceship Bridge Simulator. This is a multi-player, cooperative computer game designed to be played by three or more individuals who, in order to accomplish game objectives, must work together while on different computers. Players interact in a virtual space environment while performing their individual roles. Participants were recruited from the student population at the university. In the original study, which was conducted between Fall 2016 and Spring 2016, a total of 49 three-person teams participated.

Procedure

Artemis. Participants were recruited using the university's SONA Systems (i.e., online subject pool management site for listing studies, signing up students for sessions, and keeping track of credits earned). The research location was on the main campus, in the School of Psychology. Three participants were required to run a session. At the beginning of the experiment, participants were randomly assigned one of the roles within a team: Helm, Weapons, or Science/Engineering. Each of these roles plays a unique and specific part in the mission and, to be successful, it is necessary for the team members in different roles to work together. Leader role was

not assigned; as a matter of fact, part of the research protocol was to verbally emphasize to the participants that there is no formal leader and that they are expected to work together to accomplish mission objectives. During missions, team members could only hear but not see each other. In addition to having different roles, team members did not see identical computer screens, i.e., each team member saw the screen relevant to their role only. Brief computer-based simulation training of the video game, their missions, and their individual roles was provided. Teams were asked to complete two missions. Team members' verbal communication during both missions was recorded.

Over the course of the research session, participants were asked to complete three surveys: an initial survey collecting demographic information and cultural values was completed prior to the missions and then, after each mission, participants were asked to individually complete another survey asking about their perceptions of various team processes and emergent states. For the purposes of this study, the focus was on the measures of the perception of the leadership influence within the team. Data was collected for 49 teams that completed both missions. Recorded mission communications were transcribed by undergraduate and graduate research assistants.

Coding. Once transcribed, data was prepared for coding. Initially, it was planned that four graduate students will code all the transcribed communications data. However, scheduling issues and time constraints resulted in changes to the

original plan. Reliability was assessed in a pilot test, instead on the entire sample. Although not ideal, this approach has been used in other studies and is considered as an acceptable alternative when number of coders is limited (Lombard, Snyder-Duch, & Bracken, 2010). The coding process began with the coding team meeting to review and discuss definitions and examples of the main themes and subthemes (for codebook, see Appendix A). Next, all four coders coded together eight missions as part of the training (Lombard et al., 2010). After training, coders were split in three groups with the main coder (study's author) paired with one other coder. Each pair coded additional six randomly selected missions. Pairs coded these six missions independently, with no guidance, as recommended in the literature (Lombard et al., 2010). Inter-rater reliability analysis was performed for each pair of coders to determine if there was a sufficient agreement between the main coder and three other coders. Once it was established that there was a sufficient agreement for each pair ($k = .82, p = < .001$, $k = .87, p = < .001$, and $k = .82, p = < .001$, respectively), the main coder completed the remaining 38 missions. Agreement above .80 is generally considered to be acceptable in social sciences research, especially when calculated with conservative indices, such as Cohen's kappa (Lombard et al., 2010). An example of a coding template is provided in Appendix B.

Measures

Demographics. Demographic information was collected through the initial pre-survey. Questions included participants' age, gender, nationality, ethnicity, education level, language of previous instruction, and number of years residing in the United States.

Power distance orientation. Power distance orientation, conceptualized as an individually-held cultural value, was measured using the Earley and Erez (1997) eight-item scale. A sample item is as follows: "In work-related matters, managers have a right to expect obedience from their subordinates." Items are rated on a five point Likert-type scale, with the anchors 1 (*strongly disagree*) to 5 (*strongly agree*). Initially, it was proposed to recode the original item response scale so that the anchors range from -2 (*strongly disagree*) to 2 (*strongly agree*) in order to allow the two distinct ends of the power distance continuum to be captured more effectively. However, it was determined that such recoding would prevent the use of coefficient variation in subsequent analysis, since this particular measure of dispersion does not work with negative values (Roberson, Sturman & Simons, 2007). Therefore, the scale was ultimately used in its original format ($\alpha = .75$) (Appendix C).

Power distance climate. Adopting the dispersion approach, the measure of the team's power distance climate was derived from the mean and the standard deviation of teams' level of power distance orientation. Among dispersion

measures, coefficient of variation is frequently used to assess climate strength (Colquitt, Noe & Jackson, 2002). It represents the dispersion of the dataset relative to its own mean (Roberson, Sturman & Simons, 2007) and as such, it provides a measure of how much the group members differ on their individual scores in comparison to their team average. Less dispersed scores suggest greater similarity among team members on the variable of interest, which is then interpreted as a stronger climate. The coefficient of variation is calculated by dividing the standard deviation with the mean. In other words, this approach results in final scores interpreted in such a way that smaller standard deviations will result in smaller coefficient of variation for the teams; smaller coefficient of variation translate to stronger climate.

Perceptions of shared leadership. For the purposes of this study, perception of shared leadership was assessed as an individual-level variable. Unlike the majority of studies in which the focus is on the team's perception of shared leadership, in this study, the variable of interest was the degree to which each team member perceived shared leadership influence from others on the team. Two measures were available in the original study, each assessing slightly different aspects of individual's perception of shared leadership influence.

The *leadership reliance scale* is a self-referent measure of individual's leadership perceptions that was expected to provide greater variance because it uses a wider range of response scores. On a 5-point Likert-type scale, participants were

asked to rate the extent to which they relied on the leadership of the other two members of their team, and also to assess how much others relied on their leadership. Sample item is as follows: “I relied on Helm’s leadership during the mission”, and the responses range from 1 (*strongly disagree*) to 5 (*strongly agree*). To quantify the individual’s perception of the team’s shared leadership, the sum of each person’s ratings of all of the team members (including self-rating) was divided by the maximum score of 15. For example, if an individual rated each team member (out of three members) with the maximum score of five, the result would be $(5 \times 3)/15 = 1$, which would indicate the perception of the highest possible density of shared leadership within the team. Mission 1 and mission 2 results were combined and averaged to produce an overall perception of shared leadership for each participant.

This measurement approach parallels the use of density in social network analysis (Small & Rentsch, 2010). Density is defined as the ratio of the existing ties in the network to the number of possible ties (Hanneman & Riddle, 2005). The density ratio score can range from 0 to 1, with scores closer to 1 indicating a stronger perception of shared leadership influence within the team. Typically, the network density is derived from aggregation of all team members’ scores; however, as mentioned before, in the present study, the focal point was an individual and the extent to which each team member perceived that they relied on other team

members for leadership. In this approach, it is the individual's perception of density that was assessed rather than the overall network density.

The second measure, *leadership perception scale*, uses a three-item dichotomous (yes-no) measure to assess shared leadership influence. Participants were asked to rate each team member and self on whether they acted as a leader during the missions. The question "Who led your team during the previous mission?" can be answered "yes" or "no" for each team member (e.g. "Helm was a leader") and self (e.g. "I was a leader"). Choosing only one team member as a leader indicates the absence of shared leadership, choosing two members indicates some shared leadership, and choosing all three members as leaders indicates the greatest perception of shared leadership within the team. Because this measure is other-referent ("This person was the leader") instead of self-referent ("I relied on this person for leadership"), it was believed to adequately capture the conceptualization of leadership perceptions in this study. However, the use of dichotomous (yes/no) responses was expected to result in less variance and therefore less statistical power. Additionally, during data clean up, it was discovered that the scale was changed from dichotomous to continuous half way through the original study. The resulting reduced sample led to the decision to use this scale only in the exploratory analysis but not for a priori hypothesis testing.

Behaviorally-enacted shared leadership. The measure of behaviorally-enacted shared leadership within the team was derived from the missions'

communication data. Mission communications data was analyzed for two main themes: 1) offering leadership, and 2) accepting leadership. Each theme had three sub-themes. For offering leadership, sub-themes were: a) providing direction, b) providing purpose, and c) providing support. For accepting leadership, the three sub-themes were: a) following directions/suggestions, b) responding to requests for information, and c) seeking direction.

One of the common challenges in shared leadership research is the entanglement of shared leadership with other similar team processes (Carson et al., 2007). In particular, similarities and differences between shared leadership and traditional leadership, as well as between shared leadership and teamwork and cooperation needed to be clearly identified in the coding process. Table 2 provides a summary of important similarities and differences of these constructs; these guided our decisions as to what to include and not include in this study.

Once coded, communication data was quantified as the number of occurrences of shared leadership behavior between team members. Frequency count was determined to be an adequate measure of behaviorally-enacted shared leadership because the coding process captured the mutual influence among team members by including both their leadership and followership behaviors. Frequency of behaviorally-enacted shared leadership in the team was combined and averaged for mission 1 and mission 2, resulting in an overall index of behaviorally-enacted shared leadership for each team.

Table 2. Differentiating Shared Leadership from Similar Concepts

	Leadership	Shared Leadership	Teamwork	Cooperation
Definition/ Description	Process of influencing or motivating others to act toward accomplishment of some goal	Mutual influence process where team members share in performing leadership functions	Combined action of a group of people toward accomplishment of a common goal	Team members working with and/or assisting other team members with their tasks; can also mean complying with directives
Important Characteristics	<p>This influence process is not just incidental, it is with the specific goal(s) in mind</p> <p>It often requires some decision-making</p> <p>Influence is manifested through ‘followers’ behavior (behaving in a way consistent with leader’s suggestions, expectations, requests, or recommendations)</p> <p>Includes number of possible leadership functions & behaviors</p>	<p>More than one member of a group (other than formally appointed leader) influences other members</p> <p>Members can take turns influencing each other</p>	<p>Focused on fulfillment of commitments toward team objectives</p> <p>Commitments can be formal and assigned, or informal and assumed by the individual</p> <p>Teamwork does not always mean interdependence; contributing one’s part toward collective objectives could also be accomplished independently of other team members</p>	<p>Cooperation is a behavior of individual team members</p> <p>It is often necessary for effective teamwork but is not sufficient</p>
	Leadership & Shared Leadership		Shared Leadership & Teamwork/ Cooperation	
Similarities & Differences	<p>Shared leadership is a type of leadership; therefore the influence process at its core is the same</p> <p>The difference is in how the leadership influence is distributed: in traditional leadership, the influence flows top down while in shared leadership, influence is distributed among multiple group members/ team members and it can flow horizontally or vertically, upward or downward</p>		<p>Key difference is that shared leadership is about influencing others while teamwork is about fulfilling commitments; Teamwork can be an antecedent or outcome of shared leadership</p> <p>Cooperation can be seen as part of shared leadership process but from the followers’ side; i.e., when followers accept influence of the leader, that can be interpreted as cooperation; Cooperation can also be viewed as outcome of SL</p>	

Control variables. Control variables included prior knowledge of the team members, frequency of use of video games, how comfortable participants were speaking English, and gender. Controlling for prior knowledge of the team members was important given that the participants attend the same school, and it was possible that some may have known each other. Existing relationships between participants could have an effect on their willingness to interact with each other and enact shared leadership. Similarly, prior experience with video games in general could affect participants' reactions. How comfortable participants are speaking English was important given the large number of international students at the school. It is presumed that those uncomfortable speaking English would be less likely to engage in verbal communication during missions. Finally, controlling for gender was consistent with the research on perceptions of women as leaders (Heilman, Block, Martel, & Simon, 1989).

Analyses

Reliability Analysis

Reliability analysis was conducted for power distance orientation (PDO) scale to determine if reliability coefficient was sufficiently high to deem the use of the scale in further analysis acceptable. Cronbach alpha reliability coefficient for the scale, as well as for the individual items, was calculated in SPSS.

For coded data, inter-rater reliability (IRR) was determined by

calculating Cohen's kappa in SPSS. Cohen's kappa is believed to be the most commonly used index of rater agreement in research that involves coding of behavior (Bakeman, 2000; Lombard, Snyder-Duch, & Bracken, 2002). Kappa statistics provides a measure of the observed level of agreement between two coders for categorical variables, and because it takes into account the possibility of agreement occurring by chance, it is considered to be a more robust measure than simple percent agreement (Hallgren, 2012).

Regression

Regression-based techniques were conducted to test hypothesis 1 to 4. Specifically, the linear regression analysis was used to examine the relationship between the following variables:

- 1) Behaviorally-enacted shared leadership and perception of shared leadership (Hypothesis 1)
- 2) PDO and perception of shared leadership (Hypothesis 2)
- 3) Team PD climate and behaviorally-enacted shared leadership (Hypothesis 4)

Hierarchical linear modeling (HLM) version 7 was used to test the moderating effect of the power distance orientation on the relationship between behaviorally-enacted shared leadership (group-level) and the individual-level perception of shared leadership influence (Hypothesis 3).

HLM is best suited to test the hypothesis when data is structured at different

hierarchical levels (Aguinis, Gottfredson, & Culpepper, 2013); in the case of the present study, individual participants were nested within their teams. Because this hypothesis was concerned with the interaction effect, the random effects model was used, and all level 1 predictors (PDO and perception of shared leadership) were group-mean centered, while the level 2 predictor (behaviorally-enacted shared leadership within the team) was grand-mean centered.

Results

Descriptive Statistics

From 49 teams that participated in the original study, only 34 were analyzed as part of the final sample in this study. A total of 15 teams were removed from analysis due to incomplete or missing audio files. Most of the missing files were a result of technical difficulties with the equipment, primarily, recoding equipment malfunctioning or computer crashing during missions. In several cases, one or more participants failed to follow the directions on how to use the recording equipment resulting in loss of audio data for that particular team member. The final data set consisted of 34 teams, with 102 participants whose average age was 20.10. Regarding gender, 68% were males ($n = 69$) and 32% were females ($n = 32$). Out of the final sample, 27 students were international and 75 were domestic.

Control variables were gender, prior knowledge of the team members, frequency of playing video games, and comfort level speaking

English. In the initial analysis none of the control variables were correlated with any of the study variables; therefore, control variables were not included in the subsequent analyses. Descriptive statistics and correlations for all study variables are reported in Table 4.

Hypothesis Testing

Hypothesis 1 proposed that behaviorally-enacted shared leadership of the team would be positively related to the individual team member's perception of shared leadership, such that higher frequency of coded shared leadership behaviors within the team during both missions will lead to individual team members also perceiving higher levels of shared leadership. Simple linear regression was conducted with behaviorally-enacted shared leadership as an independent variable (IV) and perception of shared leadership as dependent variable (DV). Results indicated that behaviorally-enacted shared leadership of the team was a significant predictor of perception of shared leadership influence, $F_{(1, 33)} = 8.15, p < .01$, explaining 20% of the variance ($\beta = .45, R^2 = .20$). Thus, hypothesis 1 was supported (see Table 3 for results).

The second hypothesis predicted that individual's power distance orientation would be negatively related with his/her perception of shared leadership influence within the team. A simple linear regression was conducted with power distance orientation as an IV, and perception of shared leadership as a DV. Results indicated that power distance orientation

was not a significant predictor of the extent to which each team member perceived shared leadership within the team, $R^2 = .00$, $F_{(1, 100)} = .00$, $\beta = .00$, $p = .96$. Based on these results, hypothesis 2 was not supported (Table 4).

Hypothesis 3 proposed that power distance orientation would moderate the relationship between behaviorally-enacted shared leadership of the team and the individual's perception of shared leadership, such that the relationship will be weaker when individual power distance orientation is high. This hypothesis was tested using HLM, with power distance orientation as level 1 IV, behaviorally-enacted shared leadership as level 2 IV, and perception of shared leadership as level 1 DV. First, intra-class correlation (ICC) was calculated to determine the ratio of between group variance to the total variance. The ICC was revealed to be .12, indicating that differences across team account for 12% of variance in perception of shared leadership. Typically, ICCs in multilevel studies fall within a .05 to .20 range; thus ICC of .12 provides sufficient justification to use multilevel modeling (Aguinis, et al., 2013). The analysis of cross-level interaction in HLM revealed that the interaction was not significant ($b = -0.000877$, $p = .47$), which means that the individual's power distance orientation had no influence on the strength of the relationship between behaviorally-enacted shared leadership of the team and the perception of shared leadership of team members.

In the fourth hypothesis, it was proposed that team's power distance

climate will have a significant relationship with behaviorally-enacted shared leadership in the team. A simple linear regression was conducted with coefficient of variation of team's power distance orientation as an IV and behaviorally-enacted shared leadership as a DV. The results were not significant ($R^2 = .04$, $F_{(1,33)} = 1.23$, $p = .28$). Thus, hypothesis 4 was not supported (Table 4).

Table 3. Results of Regression Analysis for Hypothesis 1, 2, and 4

Variables	R ²	F	B	SE	p-value	N
DV: SL Perc Total						
BESL Total	.20	8.15	.53	.05	.007**	34
DV: SL Perc Total						
PDO	.00	.00	.00	.02	.95	102
DV: BESL Total						
Team PD Climate	.04	1.23	1.45	1.31	.28	34

Note. PDO = power distance orientation; SL Perc Total = perception of shared leadership for both missions combined; BESL Total = behaviorally-enacted shared leadership for both missions combined; Team PD climate measured by coefficient of variation to indicate the degree of dispersion within the team relative to its mean

* $p < .05$ ** $p < .01$ (two-tailed)

Table 4. Descriptive Statistics and Correlations for Study Variables

Variables	N	Mean	SD	1	2	3	4	5	6	7	8
PDO	102	2.74	.56	----	(.74)						
Team PD											
Climate	34	.17	.10	.23	----						
SL Perc											
Total	102	.70	.14	.96	-.18	----					
SL Perc											
M1	102	.67	.17	.83	-.15	.85**	----				
SL Perc											
M2	102	.73	.16	-.07	-.15	.84**	.44**	----			
BESL											
Total	34	47.78	27.44	-.10	-.25	.45**	.43*	.32	----		
BESL											
M1	34	20.49	12.20	-.10	-.23	.47**	.44**	.34	.97**	----	
BESL											
M2	34	27.29	15.85	-.09	-.25	.42*	.40*	.30	.98**	.91**	----

Note. PDO = power distance orientation; SL Perc = perception of shared leadership; M1 = mission 1; M2 = mission 2; BESL = behaviorally-enacted shared leadership

Cronbach's alpha reliability coefficient is presented in parentheses in the diagonal

* $p < .05$ ** $p < .01$ (two-tailed)

Exploratory Analysis

Additional exploratory analyses were conducted to examine in more detail the relationships between variables of interest, and especially to better understand why some of the hypothesis were not supported.

For Hypothesis 1, we were interested in exploring in more detail the relationship between main categories of behaviorally-enacted shared leadership (offering leadership and accepting leadership) with perception of shared leadership. The correlational matrix is presented in Table 7. When examined separately, both offering leadership and accepting leadership were found to be significant predictors of perception of shared leadership, with offering leadership explaining 16% of the variance ($R^2 = .16$, $F_{(1,32)} = 5.99$, $\beta = .40$, $p < .05$), and accepting leadership explaining 18% of the variance ($R^2 = .18$, $F_{(1,32)} = 6.89$, $\beta = .42$, $p < .05$). However, when hierarchical multiple regression was performed (Table 5), these two predictors did not provide any incremental value because of the significant high correlation between them ($r = .88$, $p < .001$).

Looking more specifically at the six sub-categories (see Table 7 for correlations), providing direction/guidance demonstrated consistently significant relationships with measure of perception of shared leadership. The results of simple linear regression show that providing direction/guidance was a significant predictor

of perception of shared leadership, explaining 15% of the variance ($R^2 = .15$,

$F_{(1,32)} = 5.78, \beta = .40, p < .05$).

Table 5. Results of Hierarchical Regression Analysis

Variables	<i>Behaviorally-enacted shared leadership</i>	
	Model 1	Model 2
<i>Step 1</i>		
Offering Leadership	.40*	
<i>Step 2</i>		
Offering Leadership		.12
Accepting Leadership		.31
R^2	.16*	.18
ΔR^2		.02
F	5.98*	3.42*
ΔF		.88

Note. * $p < .05$ ** $p < .01$ (two-tailed)

Although this study was primarily concerned with overall team members' shared leadership behavior and perception of shared leadership across both missions, in the exploratory analysis we also examined more closely any differences between mission 1 and mission 2. Overall, individual's perceptions of shared leadership in mission 1 and mission 2 were positively related ($r = .44, p < .001$); likewise, there was a strong significant positive correlation between behaviorally-enacted shared leadership in mission 1 and mission 2 ($r = .91, p < .001$). Correlational matrices for missions 1 and 2 are presented in Table 8. As reported in the results section, there was a significant overall relationship between

behaviorally-enacted shared leadership and perception of shared leadership across both missions ($R^2 = .20$, $F(1, 33) = 8.15$, $p < .01$). However, in the exploratory analysis, it was observed that behaviorally-enacted shared leadership was only a significant predictor of perception of shared leadership in mission 1 ($\beta = .44$, $p < .01$) but not in mission 2 ($\beta = .30$, $p = .09$). In general, data for mission 1 produced more significant relationships with categories of behaviorally-enacted shared leadership, suggesting that mission 1 was especially significant for this variable of interest.

Initially, it was planned to use the *leadership perception scale* as a primary measure of perception of shared leadership. In the original study, the *leadership perception scale* was a three-item dichotomous (yes-no) measure that assessed shared leadership influence by asking participants to rate each team member and self on whether they acted as a leader during the missions. Because this measure is other-referent (“This person was the leader”) instead of self-referent (“I relied on this person for leadership”), it was believed to adequately capture the conceptualization of leadership perceptions in this present study. However, the use of dichotomous (yes/no) responses was expected to result in less variance and therefore less statistical power. To address this concern, the study included an additional measure, the *leadership reliance scale*.

During the early stages of data clean up, it was discovered that the dichotomous *leadership perception scale* was replaced with a continuous 5-point

Likert-type scale about two-thirds of the way into the data collection in the original study. This instrument change resulted in a reduced sample size for both instruments, with 66 participants completing the dichotomous scale, and 36 completing the continuous scale. Because of the concerns with small sample size, and already discussed concerns with variance in the dichotomous scale, the *leadership perception scale* was not used in the a priori hypothesis testing, but it was examined in the exploratory analysis. A simple linear regression was performed to test the relationship between power distance orientation and perception of shared leadership measured with two different measurement instruments (Hypothesis 2). Interestingly, the results show that the relationship between power distance orientation and perception of shared leadership was significant when measured with continuous five-point scale *leadership perception scale* ($R^2 = .15$, $F_{(1, 34)} = 6.16$, $p < .05$), but it was not significant when measured with dichotomous *leadership perception scale* ($R^2 = .00$, $F_{(1, 63)} = .01$, $p = .90$).

To further explore the relationship between team's power distance climate and behaviorally-enacted shared leadership addressed in Hypothesis 4, teams were divided based on the coefficient of variation of their power distance scores into those determined to have weak power distance climate ($n = 13$), those with strong high power distance climate ($n = 10$) and teams with strong low power distance climate ($n = 11$). A series of one-way ANOVAs were conducted and the results showed that, in the extent to which teams engaged in behaviorally-enacted shared

leadership, there was no overall significant difference between the teams with weak power distance climate ($M = 43.23$, $SD = 26.90$), teams with strong low power distance ($M = 48.73$, $SD = 25.53$), and those with strong high power distance ($M = 52.30$, $SD = 31.30$), $F_{(2,31)} = .32$, $p = .73$). Similarly, no significant differences were found between these teams when we examined the extent to which they engaged in two main shared leadership categories (offering leadership and accepting leadership) or in any of the six subcategories of behaviorally-enacted shared leadership.

Another series of one-way ANOVAs was conducted to compare only the weak power distance climate teams ($n = 13$, $M = 43.23$, $SD = 26.90$) with strong power distance climate teams ($n = 21$, $M = 46.52$, $SD = 28.59$). There was no significant overall difference between two groups ($F_{(1,32)} = .11$, $p = .74$) in the frequency of behaviorally-enacted shared leadership. When the two main categories of behaviorally-enacted shared leadership were examined separately, the difference between teams with weak power distance climate ($M = 28.38$, $SD = 18.50$) and with strong power distance climate ($M = 42.38$, $SD = 20.22$) was not significant for accepting leadership ($F_{(1,32)} = 1.98$, $p = .17$); however, the difference between weak ($M = 28.38$, $SD = 18.50$) and strong climate teams ($M = 42.38$, $SD = 20.22$) approached significance ($F_{(1,32)} = 4.10$, $p = .051$) for offering leadership.

Finally, the relationship between team's power distance climate and behaviorally-enacted shared leadership was further examined by looking at the

possible interaction effect between team's mean and standard deviation of power distance scores. Centered score regression model was used in moderated multiple regression analysis in order to reduce multicollinearity typically associated with the interaction term. The results were not significant (Table 6).

Table 6.
Results of Moderated Hierarchical Regression Analyses for Team Mean Power Distance and Team Standard Deviation of Power Distance

Variables	Models		
	1	2	3
<i>Step 1</i>			
Team Mean PD	-.12		
<i>Step 2</i>			
Team Mean PD		-.03	-.00
Team SD PD		-.27	-.26
<i>Step 3</i>			
Team Mean PD * Team SD PD			-.04
R ²	.01	.08	.08
ΔR ²		.07	.00
F	.46	1.37	.89

Note. * $p < .05$ ** $p < .01$ (two-tailed)

Table 7.
Descriptive Statistics and Correlations for Behaviorally-enacted Shared Leadership Categories

Variables	N	M	SD	1	2	3	4	5	6	7	8	9
SL Perc Total	102	.70	.14	–								
Offering Leadership	34	106.47	63.68	.40*	–							
Direction	34	50.60	30.78	.39*	.997**	–						
Purpose	34	.50	.75	-.14	.15	.13	–					
Support	34	2.13	2.30	.31	.45**	.38**	.84	–				
Accepting Leadership	34	37.03	20.50	.42*	.88**	.88**	.21	.31	–			
Following directions	34	5.15	3.86	.33	.68**	.68**	.10	.35*	.73*	–		
Responding to request	34	2.35	2.72	.28	.56**	.58**	-.04	-.03	.56**	.56**	–	
Seeking direction	34	11.01	7.10	.32	.68**	.68**	.27	.26	.83**	.29	.12	–

Note. * $p < .05$ ** $p < .01$ (two-tailed)

Table 8.
Descriptive Statistics and Correlations for Study Variables per Mission

	Variables	N	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1	SL Perc	102	.70	.14	—											
2	M1	102	.67	.17	.85**	—										
3	M2	102	.73	.16	.84**	.44**	—									
4	BESL	34	47.78	27.44	.45**	.43**	.32	—								
5	M1	34	20.50	12.20	.47**	.44**	.33	.97**	—							
6	M2	34	27.29	15.85	.42*	.40*	.30	.98**	.91**	—						
7	Offering Leadership	34	106.47	63.68	.40*	.39	.33	.84**	.83**	.81**	—					
8	M1	34	45.44	29.38	.41*	.35*	.33	.83**	.86**	.77**	.98**	—				
9	M2	34	61.03	35.52	.37*	.32	.31	.82**	.78**	.82**	.97**	.93**	—			
10	Accepting Leadership	34	37.03	20.49	.42*	.40*	.29	.72**	.67**	.73**	.88**	.84**	.88**	—		
11	M1	34	16.06	8.75	.38*	.38*	.24	.60**	.65**	.53**	.79**	.79**	.76**	.84**	—	
12	M2	34	20.97	13.98	.38	.35*	.28	.68**	.58**	.73**	.79**	.74**	.80**	.94**	.60**	—

Note. SL Perc = perception of shared leadership; M1 = mission 1; M2 = mission 2; BESL = behaviorally-enacted shared leadership

* $p < .05$ ** $p < .01$ (two-tailed)

Discussion

This study examined the relationship between behaviorally-enacted shared leadership and its perception by the team members, as well as the potential role of one cultural value, power distance, on shared leadership. Overall, the study found significant support for the relationship between behaviorally-enacted shared leadership and individual perceptions of shared leadership, and very limited support for the relationship between individual power distance orientation and shared leadership perception.

Studies of shared leadership almost exclusively rely on self-report questionnaires to assess the extent of shared leadership occurrence. This measurement approach is mostly concerned with respondents' perceptions, with the underlying assumption that a perception of shared leadership is to some extent based on the actual behavior and actions of those who are in a leadership role (Lord & Emrich, 2001). The main purpose of this study was to examine more closely how faithfully that perception of shared leadership replicates what is actually observed in terms of particular behaviors enacted. The results confirmed that there is a significant, positive relationship between the two measures. In other words, the more team members in the study engaged in observable shared leadership behavior, the more they perceived shared leadership within the team.

Operationalizing shared leadership into different categories and sub-

categories allowed us to explore which specific behaviors contributed most to the perception of shared leadership. Initial results show that both offering leadership and accepting leadership have a significant positive relationship with the perception of shared leadership, confirming our initial conceptualization of shared leadership as both exerting and accepting influence from the team members. In the category of offering leadership, providing direction was consistently a significant predictor of shared leadership perception, while providing purpose and providing support was not. While the category of accepting leadership also demonstrated a consistently significant positive relationship with shared leadership perception, the sub-categories individually did not reach statistical significance as predictors, possibly due to covariation between them, the small sample size, and a lack of sufficient statistical power.

Looking more broadly at all of the categories, a parallel can be drawn between the results of the study and some of the issues that the researcher confronted in the study design. One of the significant challenges of this study was defining shared leadership in a way that clearly differentiates this construct from other similar constructs, such as teamwork and cooperation. Results of the study indicate that providing direction was the most relevant behavior for the perception of shared leadership, more so than providing purpose and support, following direction, or responding to a request. Providing direction is, undoubtedly, one of the most obvious leadership behaviors. On the contrary, providing purpose and

support are far more difficult to differentiate from teamwork, while following directions and responding to a request could be interpreted as falling within the broader category of cooperation.

These results suggest that, perhaps, it is not just the researchers who struggle with a clear distinction between leadership and teamwork, but that separating leadership influence from a host of other team processes may indeed be a challenge for many. In the perceptual process that takes place in our minds, it is likely that only the behaviors that clearly stand out as leadership are easily processed as such. Going forward, this could be a valuable starting point when trying to define leadership influence in general, and even more so when shared leadership is the focus of the investigation.

The data analysis and the comparison of the results from mission 1 and mission 2 revealed that, of the two, mission 1 data produced consistently significant relationships with variables of interest, while mission 2 data did not. This was an unexpected finding because the research team generally believed that mission 2 would yield more significant data, as participants were typically more confused with what to do in mission 1, and often spent a considerable portion of the mission trying to figure out how to use the equipment or understand and learn their individual role. One of the possible explanations for this pattern is that, given the confusion participants frequently exhibited in mission 1, perhaps shared leadership was more critical at this stage and, therefore, made a more lasting impact. Once

those perceptions were formed in mission 1, they remained stable and less susceptible to change regardless of what happened in mission 2. However, it is also possible that the pattern is a result of participants' fatigue, as the mission 2 shared leadership perception survey was administered approximately 2.5 - 3 hours after the beginning of the study session. It has been noted in the experimenter log that some participants visibly rushed through that final survey. If participants' fatigue could be ruled out in the future studies, it would be valuable to consider temporal aspects of the relationship and to examine more closely if any change in shared leadership perception from mission 1 to mission 2 corresponds to the change in behaviorally-enacted shared leadership between the two missions.

Perhaps one of the more intriguing findings of this study is that behaviorally-enacted shared leadership accounted for 20% of variance in the shared leadership perception. Although 20% is by no means a small variance in social science research, it still leaves us with a very large proportion of unexplained variance. Although some of that unexplained variance could be the result of measurement issues or methodological challenges of this study (further discussed in the limitation section), the question can still be raised as to what else contributes to how shared leadership is perceived, above and beyond the actual behavior of the team members.

This study proposed that individual differences might be one of the "missing links" between observable behaviors and how they are perceived.

Specifically, power distance orientation was identified as the cultural value of particular conceptual relevance to the construct of shared leadership (Pearce, 2003; Carson, 2005). Overall findings of our study suggest that power distance orientation as an individual-level variable, and power distance climate as a group-level variable, did not clearly demonstrate significant relationships with perception of shared leadership or behaviorally-enacted shared leadership. One of the possible explanations for this outcome is lack of variance in power distance orientation scores in the available data set. It is likely that the small, exclusively student sample, with 75% of domestic students, contributed to the reduced variance in both individual-level and team-level power distance.

However, we would caution against abandoning this hypothesis entirely since, in the exploratory analysis, we did find a significant relationship between power distance orientation and shared leadership perception when perception of shared leadership was measured with the continuous *leadership perception scale*. As discussed previously, this scale was not used in the main data analysis because it was introduced later in the data collection, resulting in a very small sample size of 12 teams and 36 participants. Nevertheless, in the exploratory analysis, even with such small sample, it produced a statistically significant relationship between power distance orientation and shared leadership perception. These results suggest that the use of *leadership perception scale* should probably be explored in the future research as it might, if used as a five-point rather than dichotomous measure

to ensure enough variance, conceptually capture perception of shared leadership better than the leadership reliance scale. With a better measurement instrument, it would be reasonable to re-examine the impact of power distance orientation on perception of shared leadership.

Limitations

There are several important challenges and limitations of this study. First, issues with the sample must be noted. The sample size is a common concern in team studies; in this case, the sample of 34 teams likely yielded smaller statistical power and possibly reduced likelihood of finding significant results. The use of the student sample raises questions about the generalizability of the results, as students are not considered representative of the typical working population. In addition, the use of exclusively student sample may have had an impact on the variance in power distance scores, and so did the predominantly American sample. Exploring the cultural value of power distance, even as an individual-level variable, is problematic when 2/3 of the sample is from the same culture (i.e., United States) and the entire sample belongs to the same sub-group (i.e., students).

A second challenge of the study was to find an appropriate measure of a team's power distance climate. The study's focus was on the extent to which team members differed or aligned on their individual power distance orientation and the environmental context that this dispersion of values created. Therefore, the dispersion approach was adopted and the coefficient of variation was suggested as a

measure of team's power distance climate. Although conceptually grounded in other climate strength research (Gelfand et al., 2008), this approach proved to be very challenging from the measurement perspective. Dispersion measures in general have been found to have little statistical power for detecting strength and interaction effects, detecting the true relationship less than 30% of the time (Roberson et al., 2007). Coefficient of variation, in particular, has been found to underperform when detecting the level and interaction effects (Roberson et al., 2007). These limitations, coupled with reduced variability and small sample size, suggests that not finding the significant relationship between team's power distance climate and behaviorally-enacted shared leadership should be interpreted with caution.

Another challenge for the study was identifying and defining shared leadership categories to be used when coding communications data. Delineating shared leadership from other team processes, such as teamwork and cooperation, is a common issue in shared leadership research (Carson et al., 2007). To what extent that delineation was accomplished in this study is unclear, but the significant relationships between some shared leadership categories and perception of shared leadership provide, at least, a solid starting point for future research.

In addition, the content analysis that was performed in this study was exclusively focused on what was said in the communication exchange, i.e., the written transcripts of the missions. Clearly, there is more to communication than

just words. In any type of human interaction, people communicate using multitude of methods: tone of voice, intonation, and vocal intensity, to name just few. Coding of these other verbal and nonverbal communication methods was not included in this study's design. Yet, it is certain such communication occurred and highly possible that it contributed to the perception of shared leadership, above and beyond what was said. To fully understand what it means to share leadership, it might be necessary to include expanded definition of communication methods, and at minimum, conduct more refined textual analysis in further studies.

Finally, the coding process resulted in two important limitations. First, the main researcher transcribed, coded, and analyzed all the data. While this is not a recommended research practice, it was unavoidable in this thesis research study. Similarly, the inter-rater reliability statistics were based on the smaller sample of the final set, as this researcher was unable to secure coders for the entire data set. Although calculating inter-rater reliability on a smaller, pilot sample is acceptable (Lombard et al., 2010), it must be noted as one of the limitations of the present study that may have had an impact on its findings.

Future Research Directions

There are several promising avenues for further shared leadership research. First, it would certainly be beneficial for future studies to continue expanding on current measurement instruments, but also to consider alternative approaches. In particular, behaviorally defined categories of shared leadership show promise but

need to be further examined and more precisely defined. To that effect, bringing qualitative data into shared leadership research can be a valuable next step, one that could greatly contribute to our understating of the construct. We also suggest building on our findings that behaviorally defined categories can be coded and measured, and that they indeed correlate with traditional perceptual measures of shared leadership. One logical next step would be to examine the relationship between categories of behaviorally-enacted shared leadership and actual team performance. Our findings seem to suggest that certain behavioral categories of shared leadership, such as providing direction, are more likely to be perceived as leadership behavior than others. However, unless we examine how those behavioral categories actually relate to team performance, and which ones are better predictors of that performance, we cannot draw any definitive conclusion or offer any practical suggestions to teams or organizations.

Another important area of future research is an examination of exploratory variables and boundary conditions of shared leadership (Carson, 2005; Pierce and Cogner, 2003; Pierce et al., 2010, 2014). Our study considered the impact of just one cultural value, power distance, on shared leadership, but there are other cultural values, such as individualism-collectivism, and, more broadly, other individual differences (e.g., personality, age, work-related attitudes, etc.) that need to be considered in the future.

Finally, when exploring relationships between behaviorally-enacted shared

leadership, perception, and team performance, it is important to consider not only under which conditions shared leadership emerges, but also when the relationships with valuable outcomes are strongest. Although it is premature to draw any conclusions from our study given the small sample size, our results from mission 1 versus mission 2 hint at the possibility that the temporal aspects of shared leadership process, at minimum, play a part in how shared leadership perceptions are formed. To fully understand the dynamics of this process, it might be necessary to assess shared leadership by using multiple points in time. Therefore, longitudinal studies in particular may offer new insight into the development and evolution of shared leadership within the teams.

As organizations increasingly rely on teams and teamwork, the practical implications of shared leadership research continue to grow. Developing shared leadership within the team, and within organizations more generally, can present quite a challenge. For one, it is not something employees can simply be told to do. Shared leadership is, in essence, a voluntary behavior that emerges only when people are willing and the conditions are ripe. Fostering shared leadership in an organization may very well depend on our understanding of both the people and the conditions that promote or suppress shared leadership emergence. Organizations that are able to successfully leverage the expertise of multiple employees and provide a context for integrating a diversity of ideas, skills, and competencies, not only have a better chance of maintaining a competitive edge today, but they also

increase their chances of being around as successful organizations tomorrow. By stimulating further research into shared leadership, studies like this one increase our understanding of what is actually shared in teams, which ultimately benefits those organizations interested in fostering shared leadership within their ranks.

Conclusion

Shared leadership scholars have been calling for a more comprehensive assessment of shared leadership by expanding measurement approaches, developing more nuanced conceptualizations of shared leadership based on behavioral examples, and examining how shared leadership might work in a global work context (D’Innocenzo et al., 2014; Nicolaides et al., 2014; Carson, 2005; Kirkman & Shapiro, 1997; Pierce & Conger, 2003; Pierce et al., 2010, 2014). By answering some of those calls, this study attempted to offer several theoretical and practical contributions to the field. First, this study went beyond the traditional measurement approaches that rely almost exclusively on leadership questionnaires. The use of the recorded communications among team members to identify shared leadership behaviors might have been among the first uses of alternative measurement approaches. In addition, in employing both the means and the variance in measurement of power distance climate, we highlighted the importance of considering the indices of dispersion in measurement of climate strength. Although we found only a limited support for the role of power distance

orientation, our study demonstrated that the relationship between power distance and shared leadership perception should be explored further. Finally, one of the main contributions of the study was an attempt to operationalize shared leadership in terms of observable behaviors and single out those which are specific to the leadership influence. While the entanglement with team processes such as cooperation, helping, and participation may not have been entirely resolved, these operationally defined categories are at least a step toward a more nuanced understanding of shared leadership dynamics.

References

- Abdalla, I. A., & Al-Hamoud, M. A. (2001). Exploring the implicit leadership theory in the Arabian Gulf States. *Applied Psychology: An International Review*, 50, 506–531.
- Aguinis, H., Gottfredson, R. K., & Culpepper, S. A. (2013). Best-practice recommendations for estimating cross-level interaction effects using multilevel modeling. *Journal of Management*, 39(6), 1490-1528.
- Avolio, B. J., Jung, D., Murry, W., & Sivasubramaniam, N. (1996). Building highly developed teams: Focusing on shared leadership processes, efficacy, trust, and performance. In M. Beyerlein, D. Johnson, & S. Beyerlein (Eds.), *Advances in interdisciplinary studies of work teams: Team leadership 3*, 173–209. Greenwich, CT: JAI Press.
- Avolio, B. J., Walumbwa, F. O., & Weber, T. J. (2009). Leadership: Current theories, research, and future directions. *Annual Review of Psychology*, doi: 10.1146/annurev.psych.60.110707.163621, Retrieved from <https://www.annualreviews.org>
- Bakeman, R. (2000). Behavioral observation and coding. In H. T. Reis & C. M. Judge (Eds.), *Handbook of research methods in social and personality psychology* (pp. 138-159). New York: Cambridge University Press.

- Bligh, M.C., Pearce, C.L., & Kohles, J.C. (2006). The importance of self- and shared leadership in team based knowledge work. *Journal of Managerial Psychology*, 21 (4), 296-318.
- Bolden, R. (2011). Distributed leadership in organizations: A review of theory and research. *International Journal of Management Review*, 13, 251-269.
- Bryman, A. (1987). The generalizability of implicit leadership theory. *Journal of Social Psychology*, 127(2), 129-141.
- Carnes, A., Houghton, J. D., & Ellison, C. N. (2014). What matters most in leader selection: The role of personality and implicit leadership theories. *Leadership & Organization Development Journal*, 36 (4), 360-379.
- Carson, J. (2005). Shared leadership and culture: Potential emergence and global application. In N. S. Huber & M. C. Walker (Eds.), *Emergent models of global leadership: A volume in building leadership bridges*: 1–16. College Park, MD: The James Mac Gregor Burns Academy of Leadership.
- Carson, J. B., Tesluk, P. E., & Marrone, J. A. (2007). Shared leadership in teams: An investigation of antecedent conditions and performance. *Academy of Management Journal*, 50, 1217–1234.
- Carsten, M. K., Uhl-Bien, M., West, B. J., Patera, J. L., & McGregor, R. (2010). Exploring social construction of followership: A qualitative study. *The Leadership Quarterly*, 21, 543-562.

Carter, D. R., DeChurch, L. A., Braun, M. T., & Contractor, N. S. (2015).

Social network approached to leadership: An integrative conceptual review.

Journal of Applied Psychology, 100(3), 597-622.

Chan, D. (1998). Functional relations among constructs in the same content domain

at different levels of analysis: A typology of composition models. *Journal*

of Applied Psychology, 83(2), 234–246.

Chen, G., Kirkman, B. L., Kanfer, R., Allen, D., & Rosen, B. (2007). A multilevel

study of leadership, empowerment, and performance in teams. *Journal of*

Applied Psychology, 92(2), 331-346.

Colquitt, J. A., Noe, R. A., & Jackson, C. L. (2002). Justice in teams: Antecedents

and Consequences of Procedural Justice Climate. *Personnel Psychology*,

58, 83–109.

Contractor, N. S., DeChurch, L. A., Carson, J., Carter, D. R., & Keegan, B. (2012).

The topology of collective leadership. *The Leadership Quarterly*, 23, 994–

1011. doi:10.1016/j.leaqua.2012.10.010

Cox, J.F., Pearce, C.L., & Perry, M.L. (2003). Toward a model of shared leadership

and distributed influence in the innovation process: how shared leadership

can enhance new product development team dynamics and effectiveness. In

Pearce, C.L., & Conger, J.A. (Eds), *Shared Leadership: Reframing the*

how's and why's of leadership, (pp. 48-76). Thousand Oaks, CA: Sage.

- Cronshaw, S. F., & Lord, R. G. (1987). Effects of categorization, attribution, and encoding processes on leadership perceptions. *Journal of Applied Psychology, 71*(1), 97-106.
- Daniels, M. A., & Greguras, G. J. (2014). Exploring the nature of power distance: Implications for micro- and macro-level theories, processes, and outcomes. *Journal of Management, 40*(5), 1202-1229.
- Day, D. V., & O'Connor, P. M. G. (2003). Leadership development: Understanding the process. In S. E. Murphy & R. Riggio (Eds.) *The Future of Leadership Development* (pp. 11-28). Mahwah, NJ: Lawrence Erlbaum.
- Day, D. V., Gronn, P., & Salas, E. (2004). Leadership capacity in teams. *The Leadership Quarterly, 15*, 857–880. doi:10.1016/j.leaqua.2004.09.001
- Deal, J. J., & Stevenson, M. A. (1998). Perceptions of female and male managers in the 1990s: Plus ça change. *Sex Roles, 38*(3–4), 287–300.^[L]_{SEP}
- DeRue, D. S., & Ashford, S.J. (2010). Who will lead and who will follow: A social process of leadership identity construction in organizations. *Academy of Management Journal, 35*(4), 627-647.
- Dickson, M.W., Den Hartog, D.N., & Mitchelson, J.K. (2003). Research on leadership in a cross-cultural context: Making progress, and raising new questions, *Leadership Quarterly, 14*, 6, 729–768.

- D’Innocenzo, L., Mathieu, J. E., & Kukenberger, M. R. (2014). A meta-analysis of different forms of shared leadership–team performance relations. *Journal of Management*. doi: 10.1177/0149206314525205
- Drach-Zahavy, A. (2004)a. The proficiency trap: How to balance enriched job designs and the team's need for support. *Journal of Organizational Behavior*, 25, 979–996.
- Drach-Zahavy, A. (2004)b. Exploring team support: The role of team's design, values, and leader's support. *Group Dynamics: Theory, Research, and Practice*, 8, 235–252.
- Dragoni, L. (2005). Understanding the emergence of state goal-orientation in organizational work groups: The role of leadership and multilevel climate perceptions. *Journal of Applied Psychology*, 90, 1084–1095.
- Drath, W. H., McCauley, C. D., Palus, C. J., Van Velsor, P.M.G., & McGuire, J.B. (2008). Direction, alignment, commitment: Toward a more integrative ontology of leadership. *The Leadership Quarterly*, 19, 635 – 653.
- Drucker, P.F. (1999), Knowledge-worker productivity: the biggest challenge. *California Management Review*, 41 (2), 79–94.
- Drucker, P.F. (2008). The age of discontinuity. Guidelines to our changing society (8th ed.), London: Transaction Publishers.
- Earley, P. C., & Erez, M. (1997). *The transplanted executive*. New York: Oxford University Press.

- Eden, D., & Leviathan, U. (1975). Implicit leadership theory as a determinant of the factor structure underlying supervisory behavior scales. *Journal of Applied Psychology, 60*, 736–741.
- Ehrahrt, M. G. (2012). Self-concept, implicit leadership theories, and follower preferences for leadership. *Zeitschrift für Psychologie, 220*, 231–240.
- Engle, E. M., & Lord, R. G. (1997). Implicit theories, self-schemas, and leader-member exchange. *Academy of Management Journal, 40*, 988–1010.
- Epitropaki, O., Sy, T., Martin, R., Tram-Quon, S., & Topakas, A. (2013). Implicit leadership and followership theories “in the wild”: Taking stock of information-processing approaches to leadership and followership in organizational settings. *The Leadership Quarterly, 24*, 858–881.
- Epitropaki, O., & Martin, R. (2004). Implicit leadership theories in applied settings: Factor structure, generalizability and stability over time. *Journal of Applied Psychology, 89*, 293–310.
- Epitropaki, O., & Martin, R. (2005). From ideal to real: A longitudinal study of the role of Implicit Leadership Theories on Leader–Member Exchanges and employee outcomes. *Journal of Applied Psychology, 90*(4), 659–676.

- Erez, M. (2011). Cross-cultural and global issues in organizational psychology. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology*, vol. 3: 807-854. Washington, DC: American Psychological Association.
- Farh, J., Hackett, R. D., & Liang, J. (2007) Individual-level cultural values as moderators of perceived organizational support-employee outcome relationships in China: Comparing the effects of power distance and traditionality. *Academy of Management Journal*, 50, 715–729.
- Fausing, M. S., Jeppesen, H. J., Jonsson, T. S., Lewandowski, J., & Bligh, M. C. (2013). Moderators of shared leadership: work function and team autonomy. *Team Performance Management*, 19(5/6), 244-262.
- Fuxman, L. (1999). Teamwork in manufacturing: The case of automotive industry. *International Journal of Commerce and Management*, 9 (1/2), 103-130.
- Gelfand, M.J., Leslie, L.M., & Fehr, R. (2008). To prosper, organizational psychology should...adopt a global perspective. *Journal of Organizational Behavior*, 29, 493-517.
- Gioia, D. A., & Poole, P. P. (1984). Scripts in organizational behavior. *Academy of Management Review*, 9(3), 449-459.
- Gronn, P. (2002). Distributed leadership as a unit of analysis. *The Leadership Quarterly*, 13, 423–451.

- Hanges, P., Lord, R. G., & Dickson, M. (2000). An information-processing perspective on leadership and culture: A case for connectionist architecture. *Applied Psychology, 49*, 133–161.
- Hanneman, R. A., & Riddle, M. (2005). *Introduction to social network methods*. Riverside, CA: University of California, Riverside.
- Heilman, M. E., Block, C. J., Martell, R. F., & Simon, M. C. (1989). Has anything changed? Current characterizations of men, women, and managers. *Journal of Applied Psychology, 74*(6), 935-942.
- Hallgren, K. A. (2012). Computing inter-rater reliability for observational data: An overview and tutorial. *Tutor Quant Methods Psychology, 8*(1), 23-34.
Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3402032/>
- Hoch, J. E., Pearce, C. L., & Welzel, L. (2010). Is the most effective team leadership shared? The impact of shared leadership, age diversity, and coordination on team performance. *Journal of Personnel Psychology, 9*(3), 105-116.
- Hofman, D. A., Morgeson, F. P., & Gerras, S. J. (2003). Climate as a moderator of the relationship between leader-member exchange and content specific citizenship: Safety climate as an exemplar. *Journal of Applied Psychology, 88*(1), 170-178.
- Hofstede, G. (1980). *Culture's Consequences: International differences in work-related values*. Thousand Oaks, CA: Sage Publications.

- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Hoppe, B., & Reinelt, C. (2010). Social network analysis and the evaluation of leadership networks. *The Leadership Quarterly*, 21, 600-619.
- House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V., & GLOBE Associates. (2004). *Leadership, culture and organizations: The globe study of 62 societies*. Thousand Oaks, CA: Sage Publications, Inc.
- House, R., Javidan, M., Hanges, P., & Dorfman, P. (2002). Understanding cultures and implicit leadership theories across the globe: An introduction to project GLOBE. *Journal of World Business*, 37(1), 3–10. Retrieved from <http://search.proquest.com.portal.lib.fit.edu/docview/620507684?accountid=27313>
- House, R. J., Hanges, P. J., Ruiz-Quintanilla, S. A., Dorfman, P. W., Javidan, M., Dickson, M., Gupta, V., et al. (1999). Cultural influences on leadership and organizations: Project GLOBE. In W. H. Mobley, M. J. Gessner, & V. Arnold (Eds.), *Advances in Global Leadership* (pp. 171–233). Stamford, CT: JAI Press.
- Javidan, M., Dorfman, P. W., De Luque, M. S., & House, R. J. (2006). In the eye of the beholder: Cross cultural lessons in leadership from project GLOBE. *Academy of Management Perspectives*, 20(1), 67–90.

- Javidan, M., & House, R. J. (2001). Cultural acumen for the global manager: Lessons from Project GLOBE. *Organizational Dynamics*, 29, 289-305.
- Jex, S. M., & Britt, T. W. (2014). Organizational psychology: A scientist-practitioner approach (3rd ed., pp. 487-517). Hoboken, New Jersey: John Wiley & Sons, Inc.
- Johnson, S. K., Murphy, S. E., Zewdie, S., & Reichard, R. J. (2008). The strong, sensitive type: Effects of gender stereotypes and leadership prototypes on the evaluation of male and female leaders. *Organizational Behavior and Human Decision Processes*, 106(1), 39–60.
- Katz, D., & Kahn, R. L. (1978). *The social psychology of organizations* (2nd ed.). New York: Wiley.
- Keller, T. (1999). Images of the familiar: Individual differences and implicit leadership theories. *The Leadership Quarterly*, 10(4), 589–607.
- Keller, T. (2003). Parental images as a guide to leadership sensemaking: An attachment perspective on implicit leadership theories. *The Leadership Quarterly*, 14, 141–160.
- Keltner, D., Gruenfeld, D. H., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Journal*, 110(2), 265-284.

- Kirkman, B. L., Chen, G., Farh, J., Chen, Z. X., & Lowe, K.B. (2009). Individual power distance orientation and followers reactions to transformational leaders: A cross-level, cross-cultural examination. *Academy of Management Journal*, 52(4), 744-764.
- Kirkman, B. L., & Rosen, B. (1999). Beyond self-management: Antecedents and consequences of team empowerment. *Academy of Management Journal*, 42, 58–74.
- Klein, K. J., Ziegert, J. C., Knight, A. P., & Xiao, Y. (2006). Dynamic delegation: shared, hierarchical, and deindividualized leadership in extreme action teams. *Administrative Science Quarterly*, 51, 590–621.
- Kozlowski, S. W. J., & Ilgen, D. R. (2006). Enhancing the effectiveness of work groups and teams. *Psychological Science in the Public Interest*, 7(3), 77-124.
- Liao, H., & Chuang, A. (2007). Transformation service employee and climate: A multilevel, multisource examination of transformation leadership in building long-term service relationships. *Journal of Applied Psychology*, 92(4), 1006-1019.
- Liu, S., Hu, J., Li, J., Wang, Z., & Lin, X. (2014). Examining the cross-level relationship between shared leadership and learning in teams: Evidence from China. *The Leadership Quarterly*, 25, 282-295.

- Lombard, M., Snyder-Duch, J., & Bracken, C. C. (2002). Content analysis in mass communication: Assessment and reporting of intercoder reliability. *Human Communication Research*, 28, 587-604.
- Lord, R. G. (1977). Functional leadership behavior: Measurement and relation to social power and leadership perceptions. *Administrative Science Quarterly*, 22, 114-133.
- Lord, R. G. (1985). An information processing approach to social perceptions, leadership perceptions and behavioral measurement in organizational settings. In B. M. Staw, & L. L. Cummings (Eds.), *Research in organizational behavior*, (Vol 7, pp. 85-128). Greenwich, CT: JAI Press.
- Lord, R. G., & Alliger, G. M. (1985). A comparison of four information processing models of leadership and social perceptions. *Human Relations*, 38(1), 47-65.
- Lord, R. G., Brown, D. J., & Freiberg, S. J. (1999). Understanding the dynamics of leadership: The role of follower self-concepts in the leader/follower relationship. *Organizational behavior and human decision processes*, 78(3), 167-203.
- Lord, R. G., & Emrich, C. G. (2001). Thinking outside the box by looking inside the box: Extending the cognitive revolution in leadership research. *Leadership Quarterly*, 11(4), 551-579.

- Lord, R. G., Foti, R. J., & De Vader, C. L. (1984). A test of leadership categorization theory: Internal structure, information processing, and leadership perceptions. *Organizational Behavior and Human Performance*, 34(3), 343–378.
- Lord, R. G., Hannah, S. T., & Jennings, P. L. (2011). A framework for understanding leadership and individual requisite complexity. *Organizational Psychology Review*, 1(2), 104–127.
- Lord, R. G., & Maher, K. J. (1991). *Leadership and information processing: Linking perceptions and performance*. Boston, MA: Unwin Hyman.
- Lord, R. G., & Shondrick, S. J. (2011). Leadership and knowledge: Symbolic, connectionist, and embodied perspectives. *The Leadership Quarterly*, 22(1), 207–222.
- Marks, M.A., Mathieu, J. E., & Zaccaro, S. J. (2001): A temporally based framework and taxonomy of team processes. *The Academy of Management Review*, 26 (3), 356-376.
- Mayo, M., Meindl, J. R., & Pastor, J. (2003). Shared leadership in work teams: A social network approach. In C. L. Pearce & J. A. Conger (Eds.), *Shared leadership: Reframing the hows and whys of leadership*: 193–214. Thousand Oaks, CA: Sage.

- Mehra, A., Smith, B., Dixon, A., & Robertson, B. (2006). Distributed leadership in teams: The network of leadership perceptions and team performance. *Leadership Quarterly*, 17, 232–245.
- Morgeson, F. P. (2005). The external leadership of self-managing teams: Intervening in the context of novel and disruptive events. *Journal of Applied Psychology*, 90, 497–508.
- Morgeson, F. P., DeRue, D. S., & Karam, E. P. (2010). Leadership in teams: A functional approach to understanding leadership structures and processes. *Journal of Management*, 36, 5–39.
- Murphy, K. R., & Cleveland, J. C. (1995). *Understanding performance appraisal: Social, organizational, and goal-based perspectives*. Thousand Oaks, CA: Sage.
- Nicolaides, V. C., LaPort, K. A., Chen, T. R., Tomassetti, A. J., Weis, E. J., Zaccaro, S. J., & Cortina, J. M. (2014). The shared leadership of teams: A meta-analysis of proximal, distal, and moderating relationships. *The Leadership Quarterly*, 25(5), 923-942.
- Offermann, L. R., Kennedy, J. K., & Wirtz, P. W. (1994). Implicit leadership theories: Content, structure, and generalizability. *The Leadership Quarterly*, 5(1), 43-58.

- Roberson, Q. M., Sturman, M. C., & Simons, T. L. (2007). Does the measure of dispersion matter in multilevel research? A comparison of the relative performance of dispersion indexes [Electronic version]. Retrieved from <http://www.scholarship.sha.cornell.edu/articles/101>
- Park, J. G., & Kwon, B. (2013). Literature review on shared leadership in teams. *Journal of Leadership, Accountability and Ethics, 10*(3), 28-36.
- Pearce, C. L. (2007). The future of leadership development: The importance of identity, multi-level approaches, self-leadership, physical fitness, shared leadership, networking, creativity, emotions, spirituality, and on-boarding processes. *Human Resource Management Review, 17*(4), 355-359.
- Pearce, C. L., & Conger, J. A. (2003). Shared leadership: *Reframing the hows and whys of leadership*. Thousand Oaks, CA: Sage.
- Pearce, C. L., Conger, J. A., & Locke, E. A. (2008). Shared leadership theory. *The Leadership Quarterly, 19*(5), 622-628.
- Pearce, C. L., Hoch, J. E., Jeppesen, H. J., & Wegge, J. (2010). New forms of management: Shared and distributed leadership in organizations. *Journal of Personnel Psychology, 9*(4). 151-153.
- Pearce, C. L., & Manz, C. C. (2005). The new silver bullets of leadership: The importance of self- and shared leadership in knowledge work. *Organizational Dynamics, 34*, 130-140.

- Pearce, C. L., & Sims, H. P., Jr. (2000). Shared leadership: Toward a multi-level theory of leadership. *Advances in the Interdisciplinary Studies of Work Teams*, 7, 115–139.
- Pearce, C., & Sims, H. (2002). Vertical versus shared leadership as predictors of the effectiveness of change management teams: An examination of aversive, directive, transactional, transformational and empowering leader behaviors. *Group Dynamics: Theory, Research, and Practice*, 6, 172-197.
- Pearce, C. L. & Wassenaar, C. L. (2014). Leadership is like fine: It is meant to be shared, globally. *Organizational Dynamics*, 43, 9-16.
- Pearce, C. L., Yoo, Y., & Alavi, M. (2004). Leadership, social work, and virtual teams: The relative influence of vertical vs. shared leadership in the nonprofit sector. In R. E. Riggio & S. Smith Orr (Eds.), *Improving leadership in nonprofit organizations*, 180–203. San Francisco, CA: Jossey-Bass.
- Peretz, H., & Fried, Y. (2012). A cross culture examination of performance appraisal and organizational performance. *Journal of Applied Psychology*, 97: 448-459. [11]
[SEP]
- Poole, P. P., Gioia, D. A., & Gray, B. (1989). Influence modes, schema change, and organization transformation. *Journal of Applied Behavioral Science*, 25, 271–289.

- Porr, D., & Fields, D. (2006). Implicit leadership effects on multi-source ratings for management development. *Journal of Managerial Psychology*, 21(7), 651-668.
- Rush, M. C., Thomas, J. C., & Lord, R. G. (1977). Implicit Leadership Theory: A potential threat to the internal validity of leader behavior questionnaires. *Organizational Behavior and Human Performance*, 20, 93–110.
- Ryan, A. M., McFarland, L., Baron, H., & Page, R. (1999). An international look at selection practices: Nation and culture as explanations for variability in practice. *Personnel Psychology*, 52: 359-391.
- Schneider, B., Ehrhart, M. G., & Macey, W. H. (2013). Organizational climate and culture. *Annuals Review in Psychology*, 64, 361-388.
- Schneider, B., Salvaggio, A. N., & Subirats, M. (2002). Climate strength: A new direction for climate research. *Journal of Applied Psychology*, 87, 220 – 229. [L] [SEP]
- Schwartz, S.H. (1994). Are there universals in the content and structure of values? *Journal of Social Issues*, 50, 19–45. [L] [SEP]
- Schwartz, S.H. (1999). A theory of cultural values and some implications for work. *Applied Psychology: An International Review*, 48 (1), 19-45. [L] [SEP]
- Schwartz, S.H. (2006). A theory of cultural value orientations: explication and Applications. *Comparative Sociology*, 5(2/3), 137-182. [L] [SEP]

Schwartz, S.H. (2012). An overview of the Schwartz theory of basic values.

Online Readings in Psychology and Culture, 2(1),

<http://dx.doi.org/10.9707/2307-0919.1116>

Schaubroeck, J., Lam, S.S.K., & Cha, S. E. (2007). Embracing transformation

leadership: team values and the impact of leader behavior on team

performance. *Journal of Applied Psychology*, 92(4), 1020-1030.

Scott, C. P. R., Jiang, H., Wildman, J. L., & Griffith, R. L. (under review, invited to

full manuscript). The impact of implicit collective leadership theories on the

emergence and effectiveness of leadership networks in teams. *Human*

Resource Management Review.

Sharma, B. (2003). Hofstede's measures of national culture and social progress.

Psychological Reports, 92, 1199–1202.

Shondrick, S. J., Dinh, J. E., & Lord, R. G. (2010). Developments in implicit

leadership theory and cognitive science: Applications to improving

measurement and understanding alternatives to hierarchical leadership. *The*

Leadership Quarterly, 21, 959–978.

Shondrick, S. J., & Lord, R. G. (2010). Implicit Leadership and

Followership Theories: Dynamic structures for leadership perceptions,

memory and leader–follower processes. In G. P. Hodgkinson, & J. K. Ford

(Eds.), *International Review of Industrial and Organizational Psychology*,

25, 1–33

- Small, E., & Rentsch, J. R. (2010). Shared leadership in teams: A matter of distribution. *Journal of Personnel Psychology*, 9(4), 203-211.
- Social Progress Index (2016). Social Progress Imperative. Retrieved from <http://www.socialprogressimperative.org/global-index/>
- Stock, R. M., & Özbek-Potthoff, G. (2014). Implicit leadership in an intercultural context: theory extension and empirical investigation. *The International Journal of Human Resource Management*, 25(12), 1651-1668.
- Sy, T. (2010). What do you think of followers? Examining the content, structure, and consequences of implicit followership theories. *Organizational Behavior and Human Decision Processes*, 113(2), 73-84.
- Taras, V., Kirkman, B.L., & Steel, P. (2010). Examining the impact of culture's consequences: a three-decade, multi-level, meta-analytic review of Hofstede's cultural value dimensions. *Journal of Applied Psychology* 95(3), 405–439.^{[1][SEP]}
- Uhl-Bien, M., Marion, R., & McKelvey, B. (2007). Complexity leadership theory: Shifting leadership from the industrial age to the knowledge era. *The Leadership Quarterly*, 18, 298–318.^{[1][SEP]}
- Uhl-Bien, M., Riggio, R. E., Lowe, K. B., & Carsten, M. K. (2014). Followership theory: A review and research agenda. *The Leadership Quarterly*, 25(1), 83-104.

- Uhoi, J. P., & Muller, S. (2014). Mapping the landscape of shared leadership: A review and synthesis. *International Journal of Leadership Studies*, 8(2). 66-87.
- Vella, M. (2008). White collar workers shoulder together – like it or not. *Business Week*, 4081, 58.
- Wang, D., Waldman, A. Z., & Zang, Z, (2014). A meta-analysis of shared leadership and team effectiveness. *Journal of Applied Psychology*, 99(2), 181-198.
- Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications*. New York, NY: Cambridge University Press.
- Weidner, N. W. (2012). Dissecting implicit leadership theories: A generalizability analysis. (Doctoral Dissertation). IN: Wayne State University.^[1]_{SEP}
- Weiss, H. W., & Adler, S. (1981). Cognitive complexity and the structure of implicit leadership theories. *Journal of Applied Psychology*, 66, 69–78.
- Yammarino, F.J., Salas, E., Serban, A., Shirreffs, K. and Shuffler, M.L. (2012). Collectivistic leadership approaches: putting the we in leadership science and practice. *Industrial and Organizational Psychology*, 5, 382–402.
- Yang, J., Mossholder, K. W., & Peng, T. K. (2007). Procedural justice climate and group power distance: An examination of cross-level interaction effects. *Journal of Applied Psychology*, 92, 681–692.

- Yilmaz, C., Alpkın, L., & Ergun, E. (2005). Cultural determinants of customer- and learning-oriented value systems and their joint effects on firm performance. *Journal of Business Research*, 58, 1340–1352.
- Yukl, G. (2002). *Leadership in organizations* (5th ed.). Upper Saddle River, NJ: Prentice Hall.
- Yukl, G. (2012). Effective leadership behavior: What we know and what questions need more attention. *Academy of Management Perspectives*, 66-85, <http://dx.doi.org/10.5465/amp.2012.0088>
- Yukl, G., Gordon, A., & Taber, T. (2002). A hierarchical taxonomy of leadership behavior: Integrating a half century of behavior research, *Journal of Leadership and Organizational Studies*, 9, 15-32
- Zaccaro, S. J. (2007). Trait based perspectives of leadership. *American Psychologist*, 62(1), 6-16.
- Zohar, D. (2000). A group-level model of safety climate: Testing the effect of group climate on micro-accidents in manufacturing jobs. *Journal of Applied Psychology*, 85, 587–596.^[11]_{SEP}
- Zohar, D., & Tenne-Gazit, O. (2008). Transformational leadership and group interaction as climate antecedents: A social network approach. *Journal of Applied Psychology*, 93(4), 744-757.

Appendix A. Coding Book

CODEBOOK Shared Leadership (Mina's Thesis)

Instructions: You will be coding communications of three-person teams during simulated spaceship missions. The purpose of the coding is to identify all the instances when team members engaged in shared leadership behaviors.

Unit of Analysis: Statements made by team members, either as “stand-alone” or as part of an exchange with other team members. Statements can be partial sentences, full sentences, paragraphs, or questions.

Shared Leadership definition: “*Distribution of leadership influence across multiple team members*” (Carson et al., 2007).

Operational Definition for this study: *Observable occurrence of two types of verbal communication: A) offering leadership, and B) accepting leadership.* (See below for more details).

Offering Leadership (A)	
<i>[Statements can be coded in this category as “stand-alone”, i.e., even if they are not part of an exchange with team members, or when response from team members cannot be determined.]</i>	
Coding Sub-Category	Description & Examples
Providing direction (A.1)	<p>Providing suggestions and directives on what needs to be done and how to do it, or what not to do; or making decision(s) and taking action in a way that impacts the teams’ activity or influences subsequent behavior of team members.</p> <p>Statements can be directed at others or they can be about what the speaker intends to do and has already done:</p> <ul style="list-style-type: none"> • Direct (e.g., “turn 180 degrees”) or indirect (e.g., “I think you should turn 180 degrees”); • Specific (e.g., Turn around 180 degrees, then go right to deep space 99) or vague/ general (e.g., I think you should get away from them”)

	<ul style="list-style-type: none"> • “I am going to raise the shields” or “I am going to fire” • One sentence or a paragraph • Directed at one person, or the team in general <p>Examples:</p> <ul style="list-style-type: none"> ❖ <i>“Turn right a little...go...turn a little more right and then go right.”</i> ❖ <i>“We should dock up before more enemies come”</i> ❖ <i>“After we restock we might want to head back to deep space 74, there is four enemy units, ships that are currently attacking it, if anything we can draw them off and hopefully draw a bunch of baddies with us.”</i>
Providing purpose/ team mission (A.2)	<p>Identifying or selecting team objectives or stating what is the team mission; reminding team members of team goals, or objectives throughout the missions.</p> <p>Example:</p> <ul style="list-style-type: none"> ❖ <i>“ We should also protect the cargo ship”</i> ❖ <i>“Mission is to protect the space station, so we should try to warp over there to deep space 40”</i>
Providing support (A.3)	<p>Encouraging team effort and accomplishment of goals, praising successful action, offering assistance or encouragement to the individual team members related to their performance.</p> <p>Example:</p> <ul style="list-style-type: none"> ❖ <i>“You can do it (name Weapons)! Take him down. Good Job!”</i>
<p align="center">Accepting Leadership (B)</p> <p><i>[Statements in this category are coded based on the exchange between team members; appropriate code would need to be determined from the team members' interactions]</i></p>	
Coding Sub-Category	Description & Examples
Following directions (B.1.)	<p>Following directions or suggestions of other team members who are in a leadership role; usually expressed with words such as: <i>OK, on it, sure, got it</i>, etc.</p> <p>These statements are part of an exchange with other</p>

	<p>team member(s), and usually follow a suggestion, or a directive by a team member who is assuming leadership role at the time of the exchange. [Please note that the first part of that exchange should already be coded A.1, i.e. providing direction]</p> <p>Example:</p> <ul style="list-style-type: none"> ❖ <u>Leader</u>: “Just take the front shield a little bit down.” [Code A.1] <u>Follower</u>: “Ok. Done.” [Code B.1]
Responding to a request (B.2.)	<p>Responding to a request when asked, either by action or by providing the information; these statements are part of the exchange with other team member(s).</p> <p>Example:</p> <ul style="list-style-type: none"> ❖ <u>Leader</u>: “Can you increase the warp speed?” <u>Follower</u>: “That I can do.” [Code B.2] ❖ <u>Leader</u>: “How many mines do you have left?” <u>Follower</u>: “I have four.” <u>Leader</u>: “Ok, you can set up the minefield behind us.” <u>Follower</u>: “Will do”. [Code B.2]
Seeking direction (B.3)	<p>Asking other team member(s) for directions or suggestions;</p> <p>Questions in this category should clearly ask about what needs to be done or how (e.g. “<i>Should I go to deep space 40 or 38?</i>”), and should <u>NOT</u> be requests for information (e.g., “<i>Do you see the enemies?</i>”)</p> <p>These questions are typically part of an exchange with another team member.</p> <p>Example:</p> <p><u>Helm officer to Science/Engineering</u>: “<i>Should I go to deep space 40 or 38?</i>” [Code B.3]</p> <p><u>Helm officer to Weapons</u>: “<i>Should we just use a nuke on this group right here & then go start working on the other group?</i>” [Code B.3]</p>

Category	Sub-Category	Examples	
Offering Leadership (A)	Providing Direction (A.1)		
		Go straight right now, I don't see any enemies	
		Move more to the right	
		Slow down, please	
		Stay where you are right now	
		I'd like you to turn back a bit	
		I advise we go to deep space 40	
		We should just get a little further away	
		All right, face the one that is more clustered at the bottom	
		Turn off the front shields, get the back	
		Let's get what we can	
		I am going to fire a nuke now	
		I just increased your warp so you can move faster	
		Providing Purpose/ Team Mission (A.2)	The purpose of the mission is to protect the space station, so we should try to warp over to deep space 40 'cause it's under attack
	We should also protect the cargo ship		
	I believe our number one mission goal is for Artemis not to be destroyed		
	Providing Support (A.3)	You can do it	
		Go for it	
		Nice job	
		It's all good, no worries	
Accepting Leadership	Following Following Directions (B.1)	W: Can you get a little closer to PW 32? H: That I can do.	
		S: Go ahead and dock at 74 so we can refuel H: Roger	
		S: We might have to warp speed to deep space 21, the enemies are closing in pretty fast H: Got it	
		H: Let's take them out W: Roger	
		Responding to a Request	H: Science, can you recharge the impulse speed? S: It's charged

Category	Sub-Category	Examples
	(B.2)	W: Is there any way for you to back up? H: Yes, there is W: Ok, then go for the reverse
		S: Are you still attacking 27? W: Yes S: We are about to overheat, you might need to finish him off quickly W: Ok, will do
	<i>Seeking Direction</i> (B.3)	H: Do you want me to go behind them again? W: Yes, please
		H: So, what's the strategy for deep space 21? S: As soon as we are done here, warp speed and I am letting you know what's the best strategy
		W: Are we going for a larger or smaller clump first? S: Go for larger first
		H: So you want me to stay on 3-17? W: Yeah, I am getting ready to fire at it

[illegible]

Appendix C. Power Distance Orientation Scale

Earley, P. C., & Erez, M. (1997). *The transplanted executive*. New York: Oxford University Press.

Scale

- 1 = Strongly Disagree
- 2 = Somewhat Disagree
- 3 = Neither Agree nor Disagree
- 4 = Somewhat Agree
- 5 = Strongly Agree

Items

1. In most situations managers (those with more power) should make decisions without consulting their subordinates (those with less power).
2. In work-related matters, managers (those with more power) have a right to expect obedience from their subordinates (those with less power).
3. Employees who often question authority sometimes keep their managers (those with more power) from being effective.
4. Employees should not express disagreements with their managers.
5. Managers (those with more power) should be able to make the right decisions without consulting with subordinates.
6. Managers (those with more power) who let their employees participate in decisions lose power.
7. A company's rules should not be broken even when the employee thinks it is in the company's best interest.
8. Once a decision of a top-level executive (those with more power) is made, people working for the company should not question it.